

# GALILEO'S RETORT: PETER HUBER'S JUNK SCHOLARSHIP\*

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## INTRODUCTION

The vindication of Galileo Galilei came, at long last, on October 30, 1992.<sup>1</sup> The Roman Catholic Church finally cleared Galileo's name after condemning him in 1633 as the original "junk scientist" for his heresy in attempting to prove, and teach, his fervent and long-held view that the Earth travels around the Sun.<sup>2</sup> More than 350 years had elapsed, but after a thirteen-year study of the case, a special commission of the Pontifical Academy of Sciences "brought the pope a 'not guilty' finding for Galileo who . . . at age 69, was forced to repent by the Roman Inquisition and spent the last eight years of his life under house arrest."<sup>3</sup>

If Galileo had somehow been able to see his name cleared by the Church—say, if in his declining years he had devoted his creative energies to research in cryogenic engineering and had chosen himself as the first experimental subject, leaving instructions to be awakened upon his vindication—how shocked he would have been to learn that, despite his vindication by the Church, he remained controversial among certain secular figures. Indeed, Galileo would be surprised to learn that he played a starring role in Peter W. Huber's influential recent book about the American legal system. For on awakening, our Renaissance Rip Van Winkle would learn that he had already achieved something beyond simple vindication—revenge. What is "Galileo's Revenge"? Huber, widely regarded as the nation's preeminent "guru" of tort reform,<sup>4</sup> explains in the subtitle of his book that Galileo's Revenge is "Junk Science in the Courtroom."<sup>5</sup>

In the introduction to his book, Huber declares that, "[j]unk science is the mirror image of real science."<sup>6</sup> Huber lays out his thesis in a few sentences:

Junk science cuts across chemistry and pharmacology, medicine

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1. See William D. Montalbano, *Vatican Finds Galileo 'Not Guilty'; Pope Admits Error in Rejecting Theory*, WASH. POST, Nov. 1, 1992, at A40 (reporting that Roman Catholic church admitted that Galileo's condemnation was mistake).

2. See 19 NEW ENCYCLOPEDIA BRITANNICA 640-41 (Philip N. Goetz ed., 15th ed. 1988) ("Galileo became convinced early in life of the truth of the Copernican theory (i.e., that the planets revolve about the Sun)"). In 1609, Galileo, with the aid of the telescope, attempted to support his scientific beliefs. *Id.* at 640. He first ran into trouble with the Church for three letters venturing that the movement of sunspots across the face of the Sun proved that Copernicus was right. *Id.* His authorship in 1632 of *Dialogue Concerning the Two Chief World Systems—Ptolemaic and Copernican* led to his formal condemnation under the Inquisition. *Id.* at 641.

3. Montalbano, *supra* note 1, at A40.

4. Sandra Torrey, *Walter Cronkite Video Helps Stir Up Debate over Tort Reform*, WASH. POST, Sept. 14, 1992, (Washington Business) at 5.

5. PETER W. HUBER, GALILEO'S REVENGE: JUNK SCIENCE IN THE COURTROOM (1991) [hereinafter HUBER, GALILEO'S REVENGE].

6. HUBER, GALILEO'S REVENGE, *supra* note 5, at 2.

and engineering . . . . It is a catalog of every conceivable kind of error: data dredging, wishful thinking, truculent dogmatism, and, now and again, outright fraud.

On the legal side, junk science is matched by what might be called liability science, a speculative theory that expects lawyers, judges, and juries to search for causes at the far fringes of science and beyond. The legal establishment has adjusted rules of evidence accordingly, so that almost any self-styled scientist, no matter how strange or iconoclastic his views, will be welcome to testify in court. The same scientific questions are litigated again and again, in one courtroom after the next, so that error is almost inevitable.

Junk science is impelled through our courts by a mix of opportunity and incentive. "Let-it-all-in" legal theory creates the opportunity. The incentive is money: the prospect that the Midas-like touch of a credulous jury will now and again transform scientific dust into gold.<sup>7</sup>

Huber pulls no punches in voicing the level of his concern. Huber's first major book, *Liability: The Legal Revolution and Its Consequences*, written in 1988, cataloged a long list of what Huber regards as the most outstanding flaws of the American tort liability system.<sup>8</sup> But Huber insists that one defect is paramount: "[A]mong all the many refractory problems of our modern liability system, junk science is the most insidious and the least noted."<sup>9</sup>

Huber claims to have uncovered an ongoing scheme against corporations, the public good, and science itself, carried out by seven co-conspirators: (1) liberal, ivory-tower law professors and social engineers, led by the dean of the Yale Law School, Guido Calabresi,<sup>10</sup> who care more about fairness than about legitimate science and economic efficiency and have propagated the idea that legal liability should be imposed on "deep pocket" corporations, regardless of traditional notions of causation and fault;<sup>11</sup> (2) injured consumers and workers looking for a quick buck, who bring suit on exaggerated grievances at the drop of a hat;<sup>12</sup> (3) rapacious attorneys who file

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7. HUBER, GALILEO'S REVENGE, *supra* note 5, at 3.

8. PETER W. HUBER, *LIABILITY: THE LEGAL REVOLUTION AND ITS CONSEQUENCES* (1988) [hereinafter HUBER, *LIABILITY*].

9. HUBER, GALILEO'S REVENGE, *supra* note 5, at 4.

10. See HUBER, GALILEO'S REVENGE, *supra* note 5, at 11, 13 (citing Guido Calabresi's book *The Costs of Accidents: A Legal and Economic Analysis* as summary of "liability science" school of thought and referring to followers of theory as "Calabresians").

11. See HUBER, GALILEO'S REVENGE, *supra* note 5, at 11-13 (explaining that "liability science" developed as attempt to control costs of accidents by allocating them to "cheapest cost avoider," or party who was best suited to prevent accident).

12. HUBER, GALILEO'S REVENGE, *supra* note 5, at 41.

such baseless claims;<sup>13</sup> (4) out-of-the-mainstream scientists who prostitute themselves by proffering novel and ridiculous conjectures as if they were well-demonstrated scientific facts and well-accepted theories;<sup>14</sup> (5) trial judges who ought to act as vigilant gatekeepers, but who instead abdicate their duties and "let in all the evidence," that is, the patent nonsense offered by plaintiffs' paid expert witnesses;<sup>15</sup> (6) ignorant jurors who believe such alchemical drivel;<sup>16</sup> and (7) appellate judges who ignore the truth to uphold undeserved victories and unjustifiably generous awards won by plaintiffs.<sup>17</sup> In his first book on the American tort system, Huber advanced a similar thesis about the machinations of "the Founders" of this destructive system.<sup>18</sup> The point of *Galileo's Revenge: Junk Science in the Courtroom* is to highlight the "most insidious" aspect of this scheme—the use of "junk science."<sup>19</sup>

Why does "junk science," this insidious instrument of injustice, constitute "Galileo's Revenge"? Why would Galileo endorse the view of courtroom scientific testimony sketched out in chapter one of *Galileo's Revenge*, in which the plaintiffs' trial bar breeds "entrepreneurial experts" who—through a bizarre process of "unnatural selection"—develop "exorbitant plumage and distinctive songs" and ultimately present themselves as "Mr. Professional Witness, U.S.A."?<sup>20</sup> Why would Galileo be so happy with this state of affairs?

According to Huber, Galileo is enjoying a last laugh at the expense of millions of American citizens because his example of steadfast scientific dissent in the face of overwhelming orthodoxy serves as both inspiration to, and justification for, an army of "junk scientists."<sup>21</sup> Thus, Galileo may have suffered unjustly by being branded a heretic, but at least Galileo can enjoy sweet revenge, knowing that American corporations and consumers alike are suffer-

13. HUBER, *GALILEO'S REVENGE*, *supra* note 5, at 4.

14. See HUBER, *GALILEO'S REVENGE*, *supra* note 5, at 19 (citing sources that refer to scientific experts as "hired guns" who "are like a bunch of hookers in June").

15. HUBER, *GALILEO'S REVENGE*, *supra* note 5, at 209-10.

16. See HUBER, *GALILEO'S REVENGE*, *supra* note 5, at 4.

17. HUBER, *GALILEO'S REVENGE*, *supra* note 5, at 46-47.

18. See HUBER, *LIABILITY*, *supra* note 8, at 7 ("In a remarkably short time, the Founders [Huber's term for law professors like Dean William Prosser and Dean Guido Calabresi who advocated proconsumer legal reforms] completely recast a centuries-old body of law in an entirely new mold of their own design.").

19. See HUBER, *GALILEO'S REVENGE*, *supra* note 5, at 4-5 (claiming that one urgent question facing society is "how to stop legions of case-hardened lawyers from attacking false causes, on behalf of false victims, on the basis of what nobody but a lawyer and his pocket expert call science").

20. HUBER, *GALILEO'S REVENGE*, *supra* note 5, at 19.

21. See HUBER, *GALILEO'S REVENGE*, *supra* note 5, at 194 (asserting that plaintiffs' lawyers use figure of "mini-Galileos" to plead that novel scientists should not be ostracized because, like Galileo, they are at "frontiers of medicine or science").

ing at the hands of many junk scientists, each of whom claims to be "a new Galileo, a lonely, misunderstood genius who can see wonders that others neither discern or understand."<sup>22</sup> Ostracism by so-called mainstream scientists supposedly "inspires rather than discourages the new-age Galileos."<sup>23</sup> Thus, Huber describes Galileo as "the patron saint of all heretics."<sup>24</sup>

According to Huber, the reason that Galileo's example is so pernicious, and why his revenge is so destructive, is that the lesson of Galileo's life's work not only is no longer relevant for the modern world, but it actually offers a romantic but destructive model of individual genius laboring against convention. It is true that Galileo singlehandedly made astounding discoveries, was correct in many of his conclusions, and was wrongly denounced. Huber suggests, however, that it is highly unlikely for a single scientist working now to produce an original work that proves the prevailing consensus wrong.<sup>25</sup> As a result, Galileo is not only an artifact of a bygone age, but he is also a malignant model for present-day scientists. In his day, "Galileo had limited opportunity to belong to a larger community of scientists . . . ."<sup>26</sup> Since 1660, however, "all science in the West has been built up through collegiality and consensus—and a concomitant decline in the role of the hermit scientist" who operated in the style of Galileo.<sup>27</sup> In this day and age, "[t]he vindication of good science in court" requires that we give "much less attention to the self-proclaimed new Galileos, and far more to the reticent stalwarts of the mainstream scientific community."<sup>28</sup>

Forced adherence to "mainstream" science is the ultimate theme and policy prescription of *Galileo's Revenge*. As Huber notes on his closing page, "The best test of certainty we have is good science . . . the science of consensus and peer review."<sup>29</sup> For these reasons, Huber believes that the example of Galileo should be banned from the courtroom, and until it is banned, that Galileo's Revenge will continue.

This synopsis of Huber's thesis, along with samples of the sarcastic and bombastic rhetoric contained in *Galileo's Revenge*, does not on

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22. HUBER, GALILEO'S REVENGE, *supra* note 5, at 16.

23. HUBER, GALILEO'S REVENGE, *supra* note 5, at 93.

24. HUBER, GALILEO'S REVENGE, *supra* note 5, at 194.

25. See HUBER, GALILEO'S REVENGE, *supra* note 5, at 196 (stating that modern science no longer progresses according to single theory but is "process of replication and verification, a search for consensus").

26. HUBER, GALILEO'S REVENGE, *supra* note 5, at 196.

27. HUBER, GALILEO'S REVENGE, *supra* note 5, at 196.

28. HUBER, GALILEO'S REVENGE, *supra* note 5, at 210.

29. HUBER, GALILEO'S REVENGE, *supra* note 5, at 228.

the surface reveal a serious work of legal research or thought. Ordinarily, such a book would not deserve extended analysis in a law review article. Indeed, even those closest to Huber do not appear to view him, on the issues of "tort reform" and "junk science," as a serious scholar. For example, Kenneth R. Foster, a University of Pennsylvania bioengineering professor who is Huber's co-editor for his forthcoming book, *Phantom Risks: Scientific Inference and the Law*,<sup>30</sup> recently noted that Huber is "'not an academic scholar . . . . He writes a good jeremiad. He's a polemicist.'" <sup>31</sup>

However, because both *Galileo's Revenge* and its author have received heavy publicity and have been treated by lawyers as well as laypeople as if they *were* part of legitimate scholarship on these issues, the book demands extended critical review. As explained in Part I of this Article, in recent years Huber has attained remarkable influence in policy debates over tort law in America. *Galileo's Revenge* and Huber's other writings have been widely cited by lawyers, lobbyists, and even former Vice President Dan Quayle,<sup>32</sup> and have been glowingly reviewed by lay writers. Even as a mere "polemicist" who writes nothing more than a "good jeremiad," Huber is clearly a figure to be reckoned with. Indeed, Huber's definition of "good science" as "the science of consensus and peer review" was the main explication of the scientific method relied on by Judge Alex Kozinski in his opinion for the U.S. Court of Appeals for the Ninth Circuit in *Daubert v. Merrell Dow Pharmaceuticals, Inc.*,<sup>33</sup> a case which served as the vehicle for the U.S. Supreme Court's first analysis of the expert testimony rules of the Federal Rules of Evidence.<sup>34</sup>

Parts II and III examine some of the more serious factual and legal flaws in *Galileo's Revenge*. The analysis of Huber's treatment of facts in Part II reveals a work that relies almost exclusively on anecdotal information and inflated rhetoric, misrepresents numerous as-

30. KENNETH R. FOSTER ET AL., *PHANTOM RISK: SCIENTIFIC INFERENCE AND THE LAW* (1993).

31. Milo Geyelin, *Tort Bar's Scourge: Star of Legal Reform Kindles Controversy but Collects Criticisms*, WALL ST. J., Oct. 16, 1992, at A1, A6 (quoting Kenneth R. Foster).

32. See *infra* notes 41-42 and accompanying text (noting that former Vice President Quayle relied on Huber's research and tort reform ideas).

33. 951 F.2d 1128 (9th Cir. 1991), *cert. granted*, 113 S. Ct. 320 (1992). Judge Kozinski quoted Huber's definition of good science—"the science of publication, replication, and verification, the science of consensus and peer review"—in support of his decision to disallow the plaintiffs' expert testimony. *Id.* at 1131. The author was counsel of record in the U.S. Supreme Court for the plaintiffs in *Daubert*.

34. The Supreme Court granted certiorari to resolve three issues: (1) whether the Federal Rules of Evidence dispense with the "general acceptance" test regarding expert testimony; (2) whether the lower courts can create their own exclusionary rules to replace or supplement those enacted by Congress; and (3) whether the lower courts may delegate authority for determining acceptability of scientific evidence to editors of peer-review journals. *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 113 S. Ct. 320 (1992).

pects of its subject matter, and presents no considered, objective, or empirically based measure of the extent of the "junk science" problem. The legal analysis in Part III focuses on Huber's fictional rendering of the history of the "*Frye* rule" mandating "general acceptance" of novel scientific techniques used in some types of cases,<sup>35</sup> and on Huber's failure to take into account the constitutionally mandated and traditional role of the jury in resolving factual issues in American lawsuits. Collectively, Parts II and III support the conclusion that *Galileo's Revenge* is perfectly described with Huber's own words as "a catalog of every conceivable kind of error: data dredging, wishful thinking, truculent dogmatism, and, now and again, outright fraud."<sup>36</sup>

Finally, Part IV explores how a book with such deplorable factual and legal analysis could come to be so widely cited and widely praised in both the legal and lay press. The answer is perhaps the most interesting and surprising aspect of this Article. The success of *Galileo's Revenge*, and the prominence of Peter Huber on tort reform issues generally, are largely the product of an expensive, sustained, and well-coordinated public relations effort by the Manhattan Institute for Policy Research, the conservative "think tank" that employs Huber. The Institute is assisted in this task by a phalanx of corporations and insurance companies that support the work of Huber and other similar advocates in a quite understandable attempt to reduce their tort liability to individuals. Although there is certainly nothing illegitimate about such an effort, knowledge of the financial self-interest of those who support Huber and promote his work plainly demonstrates the need for close scrutiny of the content of, and motives for, Huber's writing. Unlike Galileo, Huber is not a scholar who has achieved prominence in this field by the sheer intellectual force of his ideas. Moreover, the story of Peter Huber's rise as a corporate "guru" on the twin issues of "civil justice reform" in general, and "junk science" in particular, provides an interesting window into the role of corporate-funded public relations campaigns in the ongoing policy debate over whether the American legal system needs radical reform.

Ultimately, this Article concludes that Galileo is not the villain depicted by Huber. If awakened from cryogenic sleep today, Galileo would not exult at the "revenge" Huber believes Galileo is wreaking through the power of his gripping, but supposedly irrelevant, exam-

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35. See *Frye v. United States*, 293 F. 1013, 1014 (D.C. Cir. 1923) (articulating rule that scientific technique must have acquired "general acceptance in the particular field in which it belongs" before it may serve as the basis of evidence).

36. HUBER, *GALILEO'S REVENGE*, *supra* note 5, at 3.

ple of scientific fortitude. Rather, Galileo would again resort to the scientific method, this time in the library rather than in the astronomical observatory, and would quickly become exasperated at the unsupported thesis of Huber's book, its numerous material misrepresentations and omissions, and its manipulative and evasive method of argument. Galileo would find Huber's criticism of purported errors of scholarship by others to be hypocritical, as Huber himself repeatedly violates the standards he holds out for the world at large. After full review, Galileo would not ratify the message of *Galileo's Revenge*. Finding little factual or legal support for Huber's junk science theory and little to fear from the "new-age Galileos" that figure as the subsidiary villains in Huber's book, Galileo would instead issue a strong retort to Huber—an analysis of Huber's book, one might imagine, much like the remainder of this Article.

### I. THE PROMINENCE OF PETER HUBER

Between Peter Huber's 1988 publication of his first book criticizing the American system of tort liability, *Liability: The Legal Revolution and Its Consequences*, and the beginning of the Clinton administration, Huber attained remarkable prominence in the tort reform debate. In particular, Huber proved to be quite influential in the Bush-Quayle administration,<sup>37</sup> more so than any other professional critic of the civil justice system. Indeed, Huber's employer, the Manhattan Institute for Policy Research,<sup>38</sup> boasted:

The Bush Administration's recent initiatives (witness Dan Quayle's [August, 1991] speech to the ABA [Convention] or President Bush's recent Executive Order on civil justice reform) arise directly out of the work of Senior Fellows Walter K. Olson and Peter W. Huber; both gentlemen have met extensively with the President's domestic policy staff.<sup>39</sup>

37. See *infra* notes 41-42 and accompanying text (noting former Vice President Quayle's reliance on Huber's figures and research).

38. See *infra* part IV (discussing power of Manhattan Institute and Huber's relationship with and reliance on it). Huber acknowledges that *Galileo's Revenge* "was written under the auspices of the Civil Justice Project of the Manhattan Institute for Policy Research," where Huber is a senior fellow. HUBER, *GALILEO'S REVENGE*, *supra* note 5, at 261. Those "auspices" are not merely honorific; they pay well. As a senior fellow, Huber is one of three professional employees of the Judicial Studies Program. Huber and the other two scholars, Walter Olson, another senior fellow, and Michael Horowitz, former general counsel of the Office of Management and Budget in the Reagan administration and former head of the Reagan administration's Tort Policy Working Group, are slated to split \$500,000 this year in salaries and benefits. MANHATTAN INST. FOR POLICY RESEARCH, JUDICIAL STUDIES PROGRAM: MISSION STATEMENT AND OVERVIEW; ANNUAL BUDGET AND LIST OF CONTRIBUTORS 5-6, 8 (Nov. 12, 1992) [hereinafter MISSION STATEMENT] (on file with *The American University Law Review*); Letter from Lawrence Mone, vice president, Research, The Manhattan Institute for Policy Research, to Supporters (Feb. 1993) (on file with *The American University Law Review*).

39. Fundraising Letter from William M.H. Hammett, President, Manhattan Institute for



Likewise, Huber himself noted that when former Vice President Dan Quayle excoriated lawyers for allegedly burdening the American economy with \$80 billion a year in "direct costs" and more than \$300 billion a year in "indirect" costs,<sup>40</sup> the Vice President derived his estimates from a single source: Huber's 1988 book, *Liability*.<sup>41</sup> Independent observers and the White House staff subsequently confirmed that Huber's analysis was of unmatched influence.<sup>42</sup>

Despite a brief spate of attention at the beginning of President Clinton's term in office accorded by the withdrawn nomination of Zoe E. Baird,<sup>43</sup> the new administration appears to provide less fertile ground for Huber's ideas.<sup>44</sup> Nonetheless, Huber's well-established position of influence in the policy debates of the day remains for the most part untouched. Indeed, it is fair to say that Huber's fame and influence in this area are unequalled. The *Wall Street Journal* described Huber as the "superstar" of the movement for "civil justice reform."<sup>45</sup> The *Washington Post* echoed that Huber and his Manhattan Institute colleague Walter Olson are "the intellectual gurus of the tort-reform movement."<sup>46</sup> One law professor's examination of Huber's theory of tort law described him as "the leading tort politician-academic of these times."<sup>47</sup>

Far from being limited to a single administration or to the execu-

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Policy Research, to Corporate Executives 1 (Nov. 25, 1991) [hereinafter Fundraising Letter] (on file with *The American University Law Review*).

40. See Dan Quayle, *Civil Justice Reform*, 41 AM. U. L. REV. 559, 560 (1992) (summarizing civil justice reform proposals as presented to American Bar Association and placing direct and indirect costs of liability system at \$80 and \$300 billion, respectively).

41. See Peter W. Huber, *Dan Quayle, the Lawyers, and the AIDS Babies*, FORBES, Oct. 28, 1991, at 194, 194 (recognizing that Vice President Quayle relied on figures from *Liability*).

42. See Geyelin, *supra* note 31, at A1 (stating that Vice President relied on Huber's research to buttress his tort reform proposal); Joe Queenan, *Birth of a Notion: How the Think Tank Industry Came up with an Issue That Dan Quayle Could Call His Own*, WASH. POST, Sept. 20, 1992, at C1 (reporting that Vice President Quayle's ideas on tort reform derived from Huber and Walter Olson, both of Manhattan Institute); *Uncommon Law*, NAT'L REV., Sept. 9, 1991, at 14, 14 ("Vice President [Quayle] drew heavily upon the scholarship of Peter Huber, Walter Olson, and others in recommending sweeping changes in our civil-justice system.").

43. See Michael Isikoff, *Baird Backed Quayle Plan, Panel Told*, WASH. POST, Jan. 8, 1993, at A6 (reporting that Baird had, as part of her corporate general counsel employment, previously endorsed Quayle's proposals for national tort reform). As general counsel and senior vice president of the Aetna Life Insurance & Casualty Co., Zoe Baird proposed the creation of the Office of Judicial Impact Assessment to instigate tort reform legislation. *Id.* At that time, she not only praised Quayle's proposals, but served briefly on a Council on Competitiveness working group chaired by former Solicitor General Kenneth Starr that helped develop the proposals. *Id.*

44. See Milo Geyelin, *Product-Liability Groups Take Up Arms*, WALL ST. J., Jan. 29, 1993, at B1 (suggesting that tort reform proposals will not receive high priority in Clinton administration).

45. Geyelin, *supra* note 31, at A1.

46. Torrey, *supra* note 4, at 5.

47. Peter A. Bell, *Analyzing Tort Law: The Flawed Promise of Neocontract*, 74 MINN. L. REV. 1177, 1187 (1990). According to Professor Bell, in the last half of the 1980s, "a major new kind of analysis of the proper role of torts has come to the fore, an analysis catapulted to new

tive branch of the Federal Government, Huber's fame and influence have reached many arenas, ranging from the federal judiciary<sup>48</sup> to law schools<sup>49</sup> and the popular press.<sup>50</sup> As for Congress, according to Victor E. Schwartz, the nation's most prominent tort-reform lobbyist,<sup>51</sup> Huber's first book has had an unparalleled "influence on

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heights of prominence, and perhaps popularity, within the last year through the writing and peregrinations of Peter Huber." *Id.* at 1178. Professor Bell further noted:

Huber has traveled far and wide since the publication of [*Liability*], engaging in debates and explaining his theses. Memoranda from the Manhattan Institute discuss his extensive speaking tours, provide glowing reviews of his writings and even offer for sale audio tapes of Huber's performances on radio talk shows. At recent scholarly meetings, law professors from Yale, Stanford and the University of Houston have spoken of the sensation created by recent Huber visits. An entire panel at the annual meeting of the American Political Science Association . . . in September, 1989 was devoted to [*Liability*], with the author there to confront his "critics." Huber has been featured in front-page *New York Times* discussions of risk and public policy. He regularly writes a column in *Forbes* magazine. In short, to a much greater degree than any other writer about tort-related issues, Huber is a visible public figure.

*Id.* at 1178 n.7. Another law review writer has noted that "Peter Huber has emerged as one of the leading critics of the tort system in general, and of the handling of scientific issues in court in particular." Richard L. Marcus, *Discovery Along the Litigation/Science Interface*, 57 BROOK. L. REV. 381, 381 n.2 (1991).

48. Judge Alex Kozinski of the U.S. Court of Appeals for the Ninth Circuit has described Huber as "a man of clear vision and extraordinary talent" who is "destined to become a major player" in the movement to restore right thinking to the law of torts. Alex Kozinski, *Torts Are No Piece of Cake*, WALL ST. J., Oct. 6, 1988, at A16. Judge Kozinski has called *Liability* required reading "for anyone who wears a judicial robe." *Id.* In one judicial opinion, Kozinski cited *Liability* in support of the proposition that "commercial enterprises [cannot] be expected to flourish in a legal atmosphere where every move, every innovation, every business decision must be hedged against the risk of exotic new causes of action and incalculable damages." *Oki Am., Inc. v. Microtech Int'l, Inc.*, 872 F.2d 312, 316 (9th Cir. 1989) (Kozinski, J., concurring). As noted earlier, *Galileo's Revenge* played the central role in the theory of "good science" adopted by Kozinski in his opinion in *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 951 F.2d 1128, 1131 (9th Cir. 1991) (relying on Huber's definition that good science is "the science of publication, replication, and verification, the science of consensus and peer review"), *cert. granted*, 113 S. Ct. 320 (1992).

U.S. Supreme Court Justice Sandra Day O'Connor, for whom Huber served as a law clerk, has cited him in two opinions: *Browning-Ferris Indus., Inc. v. Kelco Disposal, Inc.*, 492 U.S. 257, 282 (1989) (O'Connor, J., concurring in part and dissenting in part) (citing *Liability* in support of fact that designers of airplanes and motor vehicles cease work on projects out of fear of punitive damages), and *Pacific Mut. Life Ins. Co. v. Haslip*, 111 S. Ct. 1032, 1059 (1991) (O'Connor, J., dissenting) (quoting *Liability* as charging that "open-ended" punitive damages instructions "stroke . . . the vindictive or sympathetic passions of juries").

49. See MANHATTAN INST. FOR POLICY RESEARCH, TEN YEAR REVIEW: 1980-1989, at 14 (1990) [hereinafter TEN YEAR REVIEW] (stating that since its publication in 1988, *Liability* has become "assigned reading at many law schools" and "Huber has visited over three dozen law schools to lecture and debate"); MANHATTAN INST. FOR POLICY RESEARCH, SUMMER UPDATE I (1991) (noting that "the final exam from the first-year torts class at Yale [Law School]. . . asked students to comment on a passage from [that] book").

50. See *infra* notes 55-60 and accompanying text (discussing press treatment of Huber's work).

51. Victor E. Schwartz, long regarded as the tort reform movement's chief lobbyist and spokesperson on Capitol Hill, "single-handedly engineered an entire subculture of the lobbying industry," serving as founder of the Product Liability Alliance and "midwife for the Product Liability Information Bureau, the Coalition for Uniform Product Liability Laws, and the Product Liability Coordinating Committee." Sheila Kaplan, *These Perennials Are Lobbyists' Cash Cows*, LEGAL TIMES, Feb. 5, 1990, at S3, S3-4.

how people think . . . . Go in any policymaker's office—Democratic or Republican—and they had his book.' ”<sup>52</sup> Huber has appeared often before the Senate Commerce Committee during the past two years, promoting federal limits on manufacturers' liability.<sup>53</sup> In May 1992, Huber, using excerpts from *Galileo's Revenge* as support, testified before top Republicans as they considered legal-reform campaign planks.<sup>54</sup>

The lay press, for the most part, has seen Huber as an unalloyed precious metal.<sup>55</sup> Much of the praise for Huber has been wholly without qualification or even hesitation, and, as will be demonstrated below, remarkably without any effort to check the accuracy of Huber's factual assertions.<sup>56</sup> Huber is routinely referred to as an estimable authority in scores of editorials, op-ed pieces, news stories, and business publications.<sup>57</sup> Although some lay reviewers have criticized, or at least acknowledged, Huber's Manichean, all-black/all-white vision of expert witnesses and their testimony, almost every critic has apparently taken for granted that Huber's factual as-

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52. See Andrew Blum, *Debate Still Rages on Torts*, NAT'L L.J., Nov. 16, 1992, at 1, 35 (quoting pro-tort reform lobbyist Victor E. Schwartz).

53. Geyelin, *supra* note 31, at A1.

54. Geyelin, *supra* note 31, at A1.

55. For example, *Galileo's Revenge* is described as a “rare” book that is uniquely “fair, important and original,” Michael Fomento, *Greedy Lawyers and “Expert” Witnesses*, WALL ST. J., Oct. 9, 1992, at A13; as a “witty and readable . . . book [that] should be read by every lawyer—regardless of his [or her] position on the controversy—seeking a better understanding of the tort system's abuses and the need for reform,” Norman L. Greene, *The Lawyer's Bookshelf*, N.Y. L.J., Dec. 23, 1991, at 2; as a book that probes issues of science and the law “with a delightful blend of humour and logic,” Barry Kay, *With Everything To Gain*, INDEPENDENT, May 16, 1992, at 28, 28; and as a book that “brilliantly . . . piles case upon case, fact upon fact, to show that junk science has become a plague on our legal system,” Robert L. Spaeth, “Junk Science” Has Become a Plague in the System, MINNEAPOLIS STAR-TRIB., May 3, 1992, at 12F; see also Charlotte Allen, “Junk Science” Prosecuted for Malicious Wounding of Justice System, WASH. TIMES, Sept. 22, 1991, at B8 (stating that *Galileo's Revenge* should be required reading for every jurist); Elizabeth Rosenthal, *Tarnished Testimony*, N.Y. TIMES, Oct. 13, 1991, § 7, at 23 (opining that *Galileo's Revenge* is perceptive combination of legal history, psychology, and sociology).

56. For an analysis of Huber's use of factual data, see *infra*, part II.

57. See, e.g., *And Justice for Some*, WASH. TIMES, Feb. 11, 1992, at F2; Doug Bandow, *Legal Alchemy in America*, FORTUNE, Oct. 7, 1991, at 184, 184; Peter Brimelow & Leslie Spencer, *The Plaintiff Attorneys' Great Honey Rush*, FORBES, Oct. 16, 1989, at 197, 197; L. Gordon Crovitz & Stephen Bates, *How Law Destroys Order*, NAT'L REV., Feb. 11, 1991, at 28, 28; Henry Fairlie, *Fear of Living: America's Morbid Aversion to Risk*, NEW REPUBLIC, Jan. 23, 1989, at 14, 14; Kenneth Jost, *Weird Science*, A.B.A. J., Oct. 1991, at 104, 104; Tex Lezar, *Texans Are Stuck with Huge, Hidden Legal Costs*, HOUS. CHRON., Mar. 11, 1992, at 55; W. John Moore, *Costly Justice*, NAT'L J., July 22, 1989, at 1898, 1898; Peter Passell, *Economic Watch; Making a Risky Life Bearable: Better Data, Clearer Choices*, N.Y. TIMES, May 9, 1989, at A1; Joe Queenan, *Birth of a Notion: How the Think Industry Came Up with an Issue That Dan Quayle Could Call His Own*, WASH. POST, Sept. 20, 1992, at C1; Paul C. Roberts, *It's Time To Scrap America's Postwar Game Plan*, BUS. WK., Apr. 9, 1990, at 14, 14; Ed Rubenstein, *Killer Regulations: Economic Costs of Consumer Protection Regulations*, NAT'L REV., Nov. 24, 1989, at 20, 20; David Warsh, *Economic Principals; No-Fault: We Hardly Knew You*, BOSTON GLOBE, Oct. 2, 1988, at A1; Pat Widder, *Smoke Signals: Baby Boomers Are Growing Less Tolerant of Risks*, CHI. TRIB., June 28, 1992, at C1.

sertions are accurate.<sup>58</sup>

The lay criticisms of Huber's work that do exist tend to focus far more on Huber's hyperbolic style of advocacy than on the quality of his research and the level of factual support for his conclusions.<sup>59</sup> Only on rare occasions has any reviewer noted the one-sided nature of Huber's critique of the civil justice system.<sup>60</sup>

With hardly an exception, legal scholars also have given Huber a free ride, evidently regarding him as so established a scholar that his credentials entitle his works to be routinely cited in the vein of

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58. Thus, a recent review opined:

Huber is very convincing when he describes the histories and techniques of lawyers who exploited these cases [i.e., injuries caused by sudden acceleration of Audi 5000 automobiles and birth defects caused by the prescription anti-nausea drug Bendectin]. Their "experts" scrupulously avoid using all scientific evidence such as quantifiable data, controlled tests or publication in peer-reviewed journals. [Huber] is less convincing when he discusses other products, for instance, the Dalkon Shield, an intrauterine birth control device that turned out to be an incubator for bacteria. . . . It is too bad that Huber does not dwell on instances where products—like asbestos, like the Dalkon Shield—have been truly injurious, and the courts a venue for justice. All issues are not black and white.

Bettyann Kevles, *Driving Junk Science from the Courts*, L.A. TIMES, Sept. 17, 1991, at E10. The reviewer conducted no independent scrutiny of Huber's presentation of the "facts" surrounding the Audi 5000 and Bendectin litigation. *Id.*

59. One commentator observed that Huber's "clever, rather high-toned expose [of "junk science"] . . . succumbs to repetitive rhetoric. Huber's hubris betrays him. He refuses to talk straight." Ann G. Sjoerdsma, *The Pseudoscience Bamboozlers*, S.F. CHRON., Nov. 3, 1991, (Sunday Review) at 9. Another reviewer opined that although *Galileo's Revenge* is a "ferocious and highly readable book . . . Huber . . . weakens his case by slipping into easy sarcasm—a temptation that's understandable, given the chicanery of his villains, but nonetheless distracting." Louise Kennedy, *Throwing "Junk Science" out of Court*, BOSTON GLOBE, Sept. 27, 1991, at 30. Still another commentator, this time with respect to *Liability*, although "impressed by Huber's attention to the real workings of the tort system and his willingness to explain and explore some of the more complex and elusive legal concepts that play such a crucial role in the courts," nonetheless complained that "Huber is a missionary, not a scholar" and that his "overheated rhetoric is so full of sarcasm and outright rancor that 'Liability' has the tone of a propaganda tract rather than a considered attempt to persuade." Jonathan Kirsch, *Who's To Blame for High Liability Cost?*, L.A. TIMES, Sept. 21, 1988, § 5, at 4.

60. For example, one commentator observed:

Huber has written an angry, informed, entertaining tirade against pseudoscientific experts-for-hire and the credulous judges, greedy attorneys, and know-nothing juries who allow them to ply their trade . . . . Huber documents junk science as practiced by experts for plaintiffs but never questions the science ginned up by defendants. He attacks plaintiffs' attorneys as flamboyant, money-grubbing shysters who care little for their clients. But he fails to note that once upon a time, many consumers had little recourse in the courts. They were beaten down by big corporations that could hire armies of experts to swear that their chemicals and their products were not dangerous. . . . [Huber's] anti-Nader sentiments seem to blind him to the fact that reform must apply equally to large corporations, which still have the resources to outexpert the most affluent of public-interest groups.

William Booth, *Book Review—Galileo's Revenge: Junk Science in the Courtroom*, WASH. MONTHLY, Sept. 1991, at 57, 57-59; see also Kennedy, *supra* note 59, at 30 (noting that "there are moments when [Huber's] faith in science seems as risky as the superstitions and pseudo-scientific fads he so effectively debunks"); Kirsch, *supra* note 59, at 4 (asserting that "Huber undermines his own credibility when he blames virtually all of the profound institutional changes in tort law on a sinister conspiracy of lawyers and judges").

*Corbin on Contracts* or *Wigmore on Evidence*, rather than carefully examined.<sup>61</sup> Those few academics who have taken their obligations as reviewers seriously have a decidedly different assessment of Huber's scholarship.<sup>62</sup> Huber's views have been particularly influential in the debate on "junk science," a topic, as well as a phrase, that Huber almost singlehandedly popularized.<sup>63</sup>

As to the merit underlying this broad acceptance of Huber's work, notwithstanding the seventeenth-century Roman Catholic Church's misplaced confidence in the Ptolemaic view of the universe, the con-

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61. See, e.g., Peter W. Sperlich, *The Liability of Junk and the Junk of Liability: Evidentiary Misdeeds in the Courts*, 75 JUDICATURE 273, 281 (1992) (noting that *Galileo's Revenge* "contributes significantly to liability jurisprudence and the law/science interaction debate," that "[i]ts data and arguments are germane to the work of judges, legal scholars, lawmakers, and forensic scientists," and that Huber's "graceful" writing "should be read by all who have an interest in our courts."); John F. Baughman, 1992 *Survey of Books Relating to the Law*, 90 MICH. L. REV. 1614, 1617 (1992) (reviewing *Galileo's Revenge*) ("Huber mercilessly and effectively describes the pernicious effect of junk science on the courtroom"); Book Note, 92 COLUM. L. REV. 247, 248 (1992) (reviewing *Galileo's Revenge*) ("[Huber's] anecdotal, provocative style is engrossing, and his revelations are astonishing."); Book Note, *Rebel Without a Cause*, 105 HARV. L. REV. 935, 936, 940 (1992) (reviewing *Galileo's Revenge*) ("Chapter by chapter, Huber documents how . . . permissiveness has obfuscated the issue of causation in tort cases. . . . Regardless of whether he overstates the present danger or whether his *Frye* solution risks undercompensating valid claims, [Huber] credibly advances the debate on regulating expert testimony."). Many law review articles treat Huber's works as essential, landmark works in the area of appropriate tort liability policy. See, e.g., Kevin M. Clermont & Theodore Eisenberg, *Trial by Jury or Judge: Transcending Empiricism*, 77 CORNELL L. REV. 1124, 1125 n.4, 1127 nn.8-9 (1992); William Powers, Jr., *A Modest Proposal To Abandon Strict Products Liability*, 1991 U. ILL. L. REV. 639, 642 n.8 (1991); Thomas C. Galligan, Jr., *Strict Liability in Action: The Truncated Learned Hand Formula*, 52 LA. L. REV. 323, 344 n.101 (1991); Mark F. Grady, *Why Are People Negligent? Technology, Nondurable Precautions, and the Medical Malpractice Explosion*, 82 NW. U. L. REV. 293, 297 n.10 (1988); Michael D. Green, *Expert Witnesses and Sufficiency of Evidence in Toxic Substances Litigation: The Legacy of Agent Orange and Bendectin Litigation*, 86 NW. U. L. REV. 643, 669-70 nn.125-26 (1992); Jon D. Hanson & Kyle D. Logue, *The First-Party Insurance Externality: An Economic Justification for Enterprise Liability*, 76 CORNELL L. REV. 129, 134 n.26 (1990); Jason S. Johnston, *Uncertainty, Chaos, and the Torts Process: An Economic Analysis of Legal Form*, 76 CORNELL L. REV. 340, 344 n.8 (1991).

62. For a discussion of negative academic appraisals of Huber's books, see *infra* part II.

Even the most conscientious of critics are seemingly overwhelmed by the sheer amount of misrepresentation and distortion contained in *Galileo's Revenge*. Thus, Professor Lewin, in a recent review of *Galileo's Revenge*, notes that "Huber fails to prove his contentions about the extent and origins of the problem of junk science because his own methodology is little better than that of the charlatans he criticizes." Jeff L. Lewin, *Book Review: Calabresi's Revenge? Junk Science in the Work of Peter Huber*, 21 HOFSTRA L. REV. 183, 186 (1993). But Lewin nonetheless falls victim to the superficial plausibility of a number of Huber's case studies. Thus, Lewin notes that Huber "is probably correct" in his scathing attack on the "junk science" supposedly involved in litigation involving spermicides, Bendectin, and cerebral palsy, *see id.* at 202; however, exhaustive scrutiny of each factual assertion made by Huber on these subjects (but not undertaken by Lewin) reveals that Huber's critiques are unfounded.

63. See *supra* notes 48-57 and accompanying text (recounting immense positive reception of Huber's work). Huber's employer, the Manhattan Institute, boasted in a recent memorandum to supporters that Huber has "played a key role in giving junk science testimony the public attention it deserves, . . . and the Supreme Court review that is now pending" in *Daubert*. "Indeed," the memorandum noted, "the very term 'junk science' has been popularized largely through Peter Huber's book, *Galileo's Revenge*." Memorandum from Michael J. Horowitz, Director, Judicial Studies Program, Manhattan Institute, to Colleagues and Associates (Jan. 19, 1993) (on file with *The American University Law Review*).

sensus views of things is often right. But as Galileo and countless others have demonstrated, consensus views are occasionally or even frequently wrong. We need not look to the legion of examples drawn from the history of science to demonstrate this point;<sup>64</sup> we need only do what the many peers of Huber who have reviewed his books have evidently not done: critically analyze his factual and legal prescriptions. The next two parts of this Article reveal that, based on such critical review, the popular acclaim enjoyed by *Galileo's Revenge* does not arise from thorough research and accurate analysis, for neither is evident in Huber's book.

## II. HUBER'S DUBIOUS USE OF "FACTS" IN *Galileo's Revenge*

Unless we are all raging hypocrites, facts should be paramount in a process that repeatedly swears fealty to the truth and nothing but the truth. . . . The rule of law depends on both lucid rules and accurate facts.<sup>65</sup>

For Peter Huber, "[t]he 'rule of law' is a completely empty promise if key facts are infinitely plastic, if there is no external and immutable reality."<sup>66</sup> "The rule of law is indeed a grand thing, but not half so grand as the rule of fact."<sup>67</sup> The question naturally arises: How well does *Galileo's Revenge* measure up by Huber's own standards? One who demands that others meet high standards for precision and probity in their research and writing has a duty to abide by those same standards, as Huber himself insists.<sup>68</sup> And a writer of

64. See generally THOMAS S. KUHN, *THE STRUCTURE OF SCIENTIFIC REVOLUTIONS* 6 (2d ed. 1970) (enumerating scientific revolutions brought about by Copernicus, Newton, Lavoisier, and Einstein as examples of situations in which time-honored theories were rejected in favor of new theories).

65. HUBER, *GALILEO'S REVENGE*, *supra* note 5, at 226.

66. HUBER, *GALILEO'S REVENGE*, *supra* note 5, at 219.

67. HUBER, *GALILEO'S REVENGE*, *supra* note 5, at 225. Huber is quite, and properly, unrelenting on this overriding theme of factual accuracy. Indeed, there is no message in *Galileo's Revenge* about which he is more insistent, going so far as to entitle Part III of the book's three parts: "The Rule of Fact." *Id.* at 169. For example, Huber states:

We want cases to be tried on their own facts, but we do not want facts themselves reduced to transitory, manipulable sound bites with no objective reality. The individual trial must somehow fit into a larger coherence, or all we have is despotism sold by the drink.

. . . But anyone who believes in the possibility of neutral law . . . must at the same time believe in the existence of objective fact, which ultimately means positive science.

. . . Shaggy edges notwithstanding, we need similar distinctions—with straightforward terminology to match—between fact and fantasy. Claims dressed up in the form of serious science but lacking serious empirical and conceptual credentials will continue to be junk science.

. . . In the end, getting facts right is a fundamental requirement of morality. *Id.* at 218-19, 223, 227.

68. See HUBER, *GALILEO'S REVENGE*, *supra* note 5, at 200-01 (excoriating lawyers and expert witnesses who are unwilling to follow the standards they impose on others by noting:

Huber's abilities is certainly capable of meeting these high standards.

Huber is a brilliant engineering Ph.D who served as an instructor at the Massachusetts Institute of Technology (MIT), graduated summa cum laude from Harvard Law School, and clerked on the U.S. Supreme Court.<sup>69</sup> Among other professional endeavors unrelated to tort reform, in the mid-1980s Huber worked as a technical consultant to the Department of Justice, compiling the voluminous, heavily documented "Huber Report" that the Department and the federal courts relied on in significantly deregulating the nation's telecommunications infrastructure.<sup>70</sup> Huber is surely able to meet high standards of accuracy and thoroughness in scholarship when he chooses to do so.

In order to test the validity of Huber's contention that junk science is running an epidemic course in the nation's courts, and that it poses "the most insidious" of "the many refractory problems of our modern liability system,"<sup>71</sup> it would appear appropriate to judge Huber's scholarship by the same standards he lays down for the conduct of science. Huber says that "real science" can be distinguished from "junk science" by asking the following questions. First, does a putative scientist base her conclusions on demonstrable facts or does she just repeat her theory by way of endless illustration? Put differently, does the scientist place fact upon fact, like brick upon brick, to erect a solid wall of argument, or does she merely raise castles of conjecture in the air?<sup>72</sup> Second, how accurate and relia-

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"[I]f people who really design cars or deliver babies are to be judged by professional standards in court, those who accuse them must be held to similar account. If the law is capable of holding defendants to professional standards, it is capable of holding witnesses to the same.").

69. See Geyelin, *supra* note 31, at A6 (stating that Huber earned both master's and doctoral degrees at MIT, received invitation to remain and teach, simultaneously attended Harvard Law School, and eventually clerked for Justice O'Connor).

70. See PETER W. HUBER, *THE GEODESIC NETWORK: 1987 REPORT ON COMPETITION IN THE TELEPHONE INDUSTRY* (1987); see also *United States v. Western Elec. Co.*, 900 F.2d 283, 291 (D.C. Cir.) (stating that Department of Justice relied on Huber Report as basis for recommending deregulation of telecommunications industry), *cert. denied*, 498 U.S. 911 (1990). Indeed, Huber's abilities in the fields of engineering and law have made him a leading figure within the telecommunications area. In 1992, Huber co-authored the first full treatise on federal telecommunications law. MICHAEL K. KELLOGG, JOHN THORNE & PETER HUBER, *FEDERAL TELECOMMUNICATIONS LAW* (1992).

71. HUBER, *GALILEO'S REVENGE*, *supra* note 5, at 4.

72. Huber posits:

Junk science is the mirror image of real science, with much of the same form but none of the same substance. . . . Take the serious sciences of allergy [sic] and immunology, brush away the detail and rigor, and you have the junk science of clinical ecology. . . . Junk science cuts across chemistry and pharmacology, medicine and engineering. It is a hodgepodge of biased data, spurious inference, and logical legerdemain, patched together by researchers whose enthusiasm for discovery and diagnosis far outstrips their skill.

ble—or how distorted—are the facts that she uses?<sup>73</sup> And third, how willing is the scientist to present all sides of a controversy and to acknowledge inconvenient facts that tend to disprove his hypotheses, i.e., to tell the complete story—“the truth, the whole truth, and nothing but the truth”<sup>74</sup>—rather than including just those facts that confirm his theories?<sup>75</sup> As the remainder of Part II demonstrates, the core of Huber’s book, which presents his empirical evidence of the junk science problem, fails these three tests.

*A. The Endless Repetition of Anecdotal Horror Stories  
and Conclusory Assertions, Without Empirical Substantiation*

*Galileo’s Revenge* fails Huber’s first test, which is citation to, and reliance on, verifiable, falsifiable factual data. The conclusion Huber seeks to prove is that junk science is the “most insidious” problem facing our tort system today. Thus, central to Huber’s entire argument is the factual assertion that “[j]unk science verdicts, once rare,

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HUBER, *GALILEO’S REVENGE*, *supra* note 5, at 2-3.

73. Huber asserts that “junk scientists” are willing to stretch whatever facts they discover to fit the theories they espouse. HUBER, *GALILEO’S REVENGE*, *supra* note 5, at 27-29. Thus:

Pathological science often needs to assert claims of great accuracy as well, to convert random noise into an apparently meaningful pattern. Observed effects rise and fall as the intensity of the field (or the alpha rays, or the ambient traces of dioxin, or whatever) are steadily increased. The skeptic concludes: there is no effect here at all. Oh no, says the believer. *Oh no*. There are “windows” of sensitivity and response here. Resonances. The effects are highly sensitive to the precise frequency of the electric field, or dosage, or what have you. To the well-calibrated eye, there is order here. The wide variations in response just reveal exquisite sensitivity to the stimulus.

However gathered, bad data serve as a springboard for spurious inferences. *Id.* at 28-29.

74. See HUBER, *GALILEO’S REVENGE*, *supra* note 5, at 2 (“The pursuit of truth, the whole truth, and nothing but the truth has given way to reams of meaningless data, fearful speculation, and fantastic conjecture.”).

Huber is right to hold out this standard for scientists and scholars, and indeed himself. But he is either confused or misleading in his suggestion that the adversarial civil justice system (or the adversarial criminal justice system, for that matter) has as its aim the pursuit of “truth, the whole truth, and nothing but the truth.” As Huber surely knows, the justice system pursues relative justice, not absolute truth. If discovering absolute truth, not pursuing relative justice, was the purpose of the justice system, many things would change. We would have inquiries, not trials. The rules governing discovery would be greatly loosened, if not entirely eliminated, and the discovery process would know no limits. Statutes of limitation and statutes of repose would be repealed. And such niceties as the work-product doctrine, the attorney-client privilege (and all other testimonial privileges), protective orders, confidentiality decrees, sealed stipulations of settlement, gag orders, and such constitutionally mandated doctrines as the exclusionary rule and the *Miranda* doctrine would have to go the way of the wind, as each substantially interferes with the pursuit of absolute truth.

75. See HUBER, *GALILEO’S REVENGE*, *supra* note 5, at 27 (claiming that “wishful researchers unconsciously discard ‘bad’ data to make remaining ‘good’ points look more important”). Huber quotes Nobel laureate Richard Feynman to good effect about why good scholarship “demands ‘utter honesty,’ a ‘leaning over backwards’ to be open and frank. ‘[T]he idea is to try to give all of the information to help others to judge the value of your contribution; not just information that leads to judgment in one particular direction or another.’” *Id.* at 207 (quoting RICHARD FEYNMAN, *SURELY YOU’RE JOKING, MR. FEYNMAN!* 34 (1985)).



*are now common.* Never before have so many lawyers grown so wealthy peddling such ambitious reports of the science of things that aren't so."<sup>76</sup> The Churchillian send-up is a nice touch, if a bit overused. But Churchill had a way with facts, not just words.<sup>77</sup> Where are Huber's facts, statistics, hard evidence, and authorities? Huber cites none, and he does not attempt to build an empirical case of his own to demonstrate the significance of the problem on which he dwells. Not only are there no studies that support Huber's view, but a recent report by the authoritative Carnegie Commission on Science, Technology, and Government concluded that, as for the "alleg[ations] that 'junk science' is flooding the courtroom," "many of the concerns are greatly exaggerated" and "it does not appear that the federal courts are being inundated with fringe science."<sup>78</sup>

The first hint of the factual inadequacy in Huber's book lies in its organization. Part I of *Galileo's Revenge* takes the form of a rambling opening statement, defining the terms "liability science" and "junk science" and introducing central villains from both law and science who are integral to the insidious problem Huber has detected.<sup>79</sup> The book ends, in Part III, with an even more discursive closing argument, repeating these themes and urging judges to reject all scientific testimony not endorsed by so-called mainstream scientists.<sup>80</sup> Less than sixty percent of *Galileo's Revenge's* pages are devoted to presenting factual support for Huber's thesis.<sup>81</sup> And in this middle section of the book, entitled "Law and Pseudoscience,"<sup>82</sup> Huber proceeds only by way of illustrative anecdotes that, while individually dramatic, are never quantified. Although Huber often refers to the persecution of witches, and in fact quantifies the scope of that long-gone junk science epidemic,<sup>83</sup> Huber's modern-day junk

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76. HUBER, *GALILEO'S REVENGE*, *supra* note 5, at 4 (emphasis added).

77. For example, Churchill knew—and noted—just how few Royal Air Force (RAF) pilots fought off the Luftwaffe during the Battle of Britain. It was those real facts, and not just Churchill's words, that made his speech so compelling. See WINSTON S. CHURCHILL, *BLOOD, SWEAT & TEARS* 341-51 (1941) (presenting Churchill's famous speech to British House of Commons on August 20, 1940, in which Churchill recounted how Britain's RAF defeated Germany's Luftwaffe despite overwhelming numerical odds and stated, "Never in the field of conflict was so much owed by so many to so few.").

78. CARNEGIE COMM'N ON SCIENCE, TECHNOLOGY, & GOV'T, *SCIENCE AND TECHNOLOGY IN JUDICIAL DECISION MAKING* 13 (Mar. 1993). The Commission did note, however, that the reported cases "represent only the tip of the iceberg." *Id.*

79. HUBER, *GALILEO'S REVENGE*, *supra* note 5, at 9-35.

80. HUBER, *GALILEO'S REVENGE*, *supra* note 5, at 171-228.

81. HUBER, *GALILEO'S REVENGE*, *supra* note 5, at 39-168.

82. HUBER, *GALILEO'S REVENGE*, *supra* note 5, at 37.

83. See HUBER, *GALILEO'S REVENGE*, *supra* note 5, at 10 (explaining how witch hunts expanded as number of witch hunters increased, and stating that "[b]etween the Renaissance and the Reformation, half a million witches were burned at the stake, for crimes committed only in other people's dreams").

science anecdotes never seem to make it into a table or chart and are never cited as anything but individual examples of a supposed whole. Huber's portrait of bad science running riot over good is at best illustrative and impressionistic.

It may seem odd that an author who so revels in the hard sciences of numerical, mathematically measurable, and provable (or falsifiable) facts, and who so chastises expert witnesses whom he terms "liability scientists" for their putative failure to use empirical, quantifiable data, is so chary of using them himself. But the absence in *Galileo's Revenge* of empirically verifiable indicia of the "junk science" problem hardly seems an inadvertence. More likely, it is a strategem designed to avoid the sort of intense criticism that Huber faced when he did set forth a key, bottom-line statistic in his 1988 book, *Liability: The Legal Revolution and Its Consequences*—for which Huber received intense criticism on the ground that he had simply concocted the number as a means of dramatizing a supposedly engulfing tide of frivolous lawsuits, absurd verdicts, outrageous damage awards, and ridiculous rulings.<sup>84</sup>

As noted in Part I, former Vice President Dan Quayle based his charge that lawsuits were costing the American economy \$300 billion a year entirely on the "facts" that Huber cited in *Liability*.<sup>85</sup> The trouble with the \$300 billion figure is that it does not bear up under even cursory scrutiny. As the venerable British journal *The Economist* has summarized, the "\$300 billion figure has no discernible connection to reality,"<sup>86</sup> and "is impossible to justify."<sup>87</sup> "[T]here is scant evidence of the catastrophic damage described by Mr. Quayle and other critics," and, in fact, "much of the conventional wisdom about product liability that lies behind the alarmist talk is plain wrong."<sup>88</sup>

This view has been echoed by Judge Roger J. Miner of the U.S. Court of Appeals for the Second Circuit, a prominent judicial conservative who was appointed to the bench in 1985 by President Reagan. Speaking before the Association of the Bar of the City of New York in October, 1992, Miner advised that "'it seems almost certain that all of [Quayle's] figures were wrong.'"<sup>89</sup> In particular, Miner continued, "[t]he \$300 billion figure has been demonstrated to be

84. See HUBER, *LIABILITY*, *supra* note 8, at 4 (citing \$80 billion figure as direct cost of liability system and \$300 billion as indirect cost).

85. See *supra* notes 39-42 (discussing former Vice President's reliance on Huber's figures).

86. *Order in the Tort*, *ECONOMIST*, July 18, 1992, (Survey) at 8, 13.

87. *Not Guilty*, *ECONOMIST*, Feb. 13, 1993, at 63, 63.

88. *Id.*

89. Henry J. Reske, *In Defense of Lawyers: Conservative Judge Challenges Quayle Statistics*, A.B.A. J., Jan. 1993, at 33, 33 (quoting Judge Roger J. Miner).

a product of casual speculation and not derived in any sense from investigative or statistical analysis.' ”<sup>90</sup>

As University of Wisconsin law professor Marc Galanter has reported, Quayle took his numbers from “liability guru Peter Huber, who, it is fair to say, made [them] up.”<sup>91</sup> Galanter went to some effort to try to track down the sources and reasoning behind Huber’s \$300 billion number. His exegesis deserves to be quoted at length:

Those who beat the antilawyer drum tell us, to take a statement made by the vice-president to a group of business leaders last October, that “the legal system . . . now costs Americans an estimated \$300 billion a year.” Three hundred billion? Where does that come from? The vice-president has it from the Council on Competitiveness (which he chairs), whose “Agenda for Civil Justice Reform,” released August 13, 1991, borrows it from an article in *Forbes*, which in turn took it from liability guru Peter Huber, who, it is fair to say, *made it up*.

From a single sentence spoken by corporate executive Robert Malott in a 1986 roundtable discussion of product liability, Huber, in his 1988 book *Liability: The Legal Revolution and Its Consequences*, adopted an unsubstantiated estimate that the direct costs of the U.S. tort system are at least \$80 billion a year—a number far higher than the estimates in careful and systematic studies of these costs. Huber then multiplied Malott’s surmise by 3.5 and rounded it up to \$300 billion—and called that the indirect cost of the tort system. The 3.5 multiplier came from a reference in a medical journal editorial concerning the effects on doctors’ practices of increases in their malpractice insurance premiums. Huber’s book contained no discussion of the applicability of this multiplier. *It would appear that Huber, who has recently taken to lecturing on the dangers of “junk science,” certainly knows whereof he speaks.*

So the vice-president’s [and Huber’s \$300 billion] cost estimate is not the product of any investigation or analysis by the competitiveness council, or by *Forbes*, or by Huber, but is a product of casual speculation.<sup>92</sup>

Other scholars have agreed with Galanter’s criticisms of Huber’s “utterly cavalier treatment of facts” and “use of sources that would

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90. *Id.*

91. Marc Galanter, *Pick a Number, Any Number*, AM. LAW., Apr. 1992, at 82, 84 [hereinafter Galanter, *Pick a Number*].

92. *Id.* at 84 (emphasis added); see also Carolyn Colwell, *A Defense Lawyer for Lawyers; State Bar Head Says Bush-Quayle Attacks on Attorneys Are “Nonsense”*, NEWSDAY, Nov. 2, 1992, at B36 (citing Harvard professor Paul Weiler’s objections to Huber’s estimate that yearly cost of litigation is \$300 billion); Marc Galanter, *Bumbling on Billions*, AM. LAW., Apr. 1992, at 86, 86 (discussing Huber’s lack of scholarly research and analysis).

shame any first-year law student.”<sup>93</sup> Thus, Professor Nicholas A. Ashford, who taught Huber when he studied engineering at MIT, characterized Huber’s manipulation of the facts from which the \$300 billion estimate was derived as nothing less than a “‘slick sleight of hand.’”<sup>94</sup> Peter L. Kahn, an economist at Catholic University’s Columbus School of Law, called Huber’s “numbers totally misleading. They immensely overstate the cost of the tort system to society.”<sup>95</sup> Deborah R. Hensler, senior social scientist at the RAND Institute for Civil Justice, a highly regarded research center, accused Quayle of presenting “‘shaky’” statistics that are “‘at best incomplete and at worst misleading.’”<sup>96</sup> Mark Hager, a professor at The American University’s Washington College of Law who analyzed the provenance and accuracy of the \$300 billion figure in exceedingly fine detail in six pages of his superb Stanford Law Review article on *Liability*, castigated that figure as a “huge exaggeration.”<sup>97</sup>

Huber’s use of the \$300 billion “factoid” appears symptomatic of Huber’s writings overall. Thus, Harvard law professor and top Rea-

93. Galanter, *Pick a Number*, *supra* note 91, at 82, 84.

94. Geyelin, *supra* note 31, at A1 (quoting Nicholas Ashford).

95. Peter L. Kahn, *Pricing the U.S. Legal System*, CHRISTIAN SCI. MONITOR, Sept. 11, 1992, at 19.

96. Milo Geyelin, *Quayle’s Data in Proposed Reform of Legal System Called Misleading*, WALL ST. J., Feb. 4, 1992, at B7 (quoting Deborah Hensler).

97. Mark M. Hager, *Civil Compensation and Its Discontents: A Response to Huber*, 42 STAN. L. REV. 539, 547 (1990). For example, Hager traces the origin of one key element of the \$300 billion “liability tax,” the supposed \$80 billion a year in direct liability costs that burden the U.S. economy:

The source of this figure is mysterious and its accuracy doubtful.

Huber gives only one cite for the figure: “*Chief Executive*, Summer 1986, p. 32.” Ever hear of *Chief Executive*? Neither had I, but it turns out to be a kind of coffee table magazine for high executives: lots of color photos and gossip tidbits about business luminaries. Its statement of editorial policy explains:

Chief Executive is a journal of opinion by and for CEOs . . . . Our aim is to . . . raise issues and offer solutions . . . without the editorial filter of the news media. . . . Chief Executive is not a newsgathering magazine . . . . It serves as a forum through which . . . [CEOs] can exchange opinions and get to know one another.

Huber’s endnote refers us to a [*Chief Executive*] combination feature on “The Liability Crisis,” part of it done in that familiar journalistic forum style: reprinting an interviewer’s questions and the oral remarks of several assembled pundits. The specific source for Huber’s figure is a remark by Robert Malott, chair of the Business Roundtable’s product liability task force, that “insurance liability costs industry about \$80 billion a year.” Malott gives no documentation for his remark, so it is difficult to know on what it is based or what types of costs the figure is meant to include. It is striking, to say the least, that Huber should rely on such a casual source for so crucial a point in his argument.

Huber characterizes this \$80 billion annual figure as the sum of what tort liability costs America “directly.” Malott does not use the term “directly,” and Huber does not explain why he inserts the adjective or what it denotes. Hence, the meaning and significance of the figure, already vague as posited by Malott, becomes even more slippery in Huber’s hands.

*Id.* (footnotes omitted).

gan Justice Department official Richard Stewart criticized *Liability* for Huber's "‘embrace of large conclusions on the basis of partial or inadequate evidence.’"<sup>98</sup> Joseph A. Page, a professor at the Georgetown University Law Center, faulted Huber for the "many inaccuracies and distortions sprinkled throughout [*Liability*]."<sup>99</sup> Even conservative scholars fault Huber for his reckless disregard of factual accuracy. Thus, Jeffrey O’Connell of the University of Virginia Law School, who generally agrees with a number of Huber’s proposals, "finds fault with some of his methodology and data. ‘I think he does extrapolate from some pretty marginal data sometimes.’"<sup>100</sup> Professor Hager goes a bit further: he finds *Liability* to be "a book riddled with flaws and errors—factual, historical, logical, philosophical, and moral—so serious as to make its destined status as ‘authoritative’ a disturbing prospect."<sup>101</sup> Hager concludes: "Sloppy scholarship and flimsy argumentation make the book too flawed to be taken seriously. Huber’s statistics and anecdotes about the liability crisis are so misleading that they amount to little more than scare tactics."<sup>102</sup>

Sadly, the only lesson that Huber seems to have gleaned from these criticisms of his first book is not that providing accurate facts and reliable numbers is indispensable, but that in the polemical

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98. Geyelin, *supra* note 31, at A6 (quoting Richard Stewart).

99. Joseph A. Page, *Deforming Tort Reform*, 78 GEO. L.J. 649, 659 (1990). Page concludes that *Liability* is generally flawed by a "cavalier regard for accuracy." *Id.* at 697; see also Vincent R. Johnson, *Liberating Progress and the Free Market from the Specter of Tort Liability*, 83 NW. U. L. REV. 1026, 1031 n.35 (1989) ("While the accuracy of Huber’s argument is often a matter of interpretation and emphasis, at some junctures, certain factual assertions appear to be simply incorrect or plainly misleading."); Alan O. Sykes, *Reformulating Tort Reform*, 56 U. CHI. L. REV. 1153, 1157 (1989) (noting that "[u]nfortunately, Huber’s method of proof as to the existence of error and its consequences is sometimes bald assertion").

100. Geyelin, *supra* note 31, at A6 (quoting Jeffrey O’Connell).

101. Hager, *supra* note 97, at 540.

102. Hager, *supra* note 97, at 579. Despite the strong criticisms contained in Geyelin’s *Wall Street Journal* expose of Oct. 16, 1992, Geyelin, *supra* note 31, at A1, A6, including negative comments by a co-author of his next book and two of his former professors, *id.*, three months transpired before Huber publicly commented, in the form of a letter to the editor of the *Journal*. Peter W. Huber, "Sleight of Hand?" *Look Closer*, WALL ST. J., Jan. 15, 1993, at A11. Despite Huber’s ample time for reflection on the range of criticisms in the article, Huber elected to respond to only one criticism, that of his \$80 billion/\$300 billion annual "tort tax" figure. Huber complained that Geyelin’s article "focused on a single paragraph from my 1988 book 'Liability.' You dismissed my \$80 billion estimate of the direct costs of liability insurance as conjecture. . . . There followed a quote accusing me of 'slick sleight of hand.'" *Id.* Of course, Geyelin’s article highlighted the \$300 billion figure as but *one* (albeit the most glaring) example of Huber’s decidedly unscholarly reliance on unsubstantiated facts and rhetorical excesses, as to the rest of which Huber had nothing to say. Even as to the \$300 billion figure, Huber’s defense was to quote a 1992 clip from the RAND Corporation’s Institute for Civil Justice, summarizing the origins of Huber’s \$300 billion figure, noting that it "raises some questions" about the validity of the analysis, offering an alternative estimate of the cost of the tort system, and opining that "[r]ight now, the answer to these questions must be that we really don’t know." *Id.*

writing of a "good jeremiad" it is necessary to dispense with concrete facts and numbers *in their entirety* so as to avoid giving critics a clear target. Accordingly, in *Galileo's Revenge* Huber has totally eschewed hard numbers and solid statistics, opting instead for soft anecdotes that are a good bit more difficult to appraise, much less challenge. Thus, Huber nowhere documents his specific, central charge that "[j]unk science verdicts, once rare, are now common."<sup>103</sup> *Galileo's Revenge* fails Huber's first test for good analysis. Huber does not even attempt to establish verifiable or falsifiable factual data, but instead relies on endless repetition of the same theory, based on isolated anecdotal information.

### B. *The Factual Distortions in Case Studies*

Huber's second test for distinguishing "good science" from "junk science"—or, for our purposes, good scholarship from "junk scholarship"—involves analyzing the accuracy and reliability of the individual facts used by the scientist or the author. *Galileo's Revenge* fails this test as well.

Unable to cite any statistical measures to prove that junk science verdicts are "common," Huber devotes the middle seven chapters of *Galileo's Revenge* to loose case studies of supposed junk science. The first five chapters present anecdotal information in five kinds of cases, cases put forth by Huber as proof of junk science run wild: trauma-induced cancer, Audi 5000 "sudden acceleration," cerebral palsy as a result of birth malpractice, clinical ecology, and Bendectin. Two chapters then stress thematic concerns about tort law's allowability of recovery for fear of future injury and tort law's ignorance of environmental and lifestyle factors contributing to personal injuries.

The use of illustrative examples and anecdotes is not a wholly illegitimate method of argument, but it has its dangers.<sup>104</sup> Even assuming that the portraits accurately depict the problem or tendency they purport to describe, there always remains the question whether the examples delineated as prototypes are really representative of other cases. For example, readers of reports prepared by statisticians and

103. HUBER, *GALILEO'S REVENGE*, *supra* note 5, at 4.

104. As Professor Saks has persuasively pointed out, "anecdotal evidence is heavily discounted in most fields" because it "permits only the loosest and weakest of inferences about matters a field is trying to understand." Michael J. Saks, *Do We Really Know Anything About the Behavior of the Tort System—And Why Not?*, 140 U. PA. L. REV. 1147, 1159 (1992). "[I]f we want to know how the [tort litigation] system is really performing . . . then we must do more than fling anecdotes back and forth," partly because "[s]ome litigation system anecdotes are simply fabricated," and partly because "[a]necdotes have the power to mislead us into thinking we know things that anecdotes simply cannot teach us." *Id.* at 1160-61.

political pollsters are typically cautioned to inquire whether the sample studied was a truly representative segment of the whole. Huber provides no basis for establishing whether the examples he gives of junk science are typical or instead aberrant. He simply asserts that the specific examples he cites are characteristic of overall trends and entreats the good reader to trust him.

Beyond the lack of any basis for extrapolating from a few case studies to a broader conclusion, the key case studies offered by Huber are themselves plagued by heavy misstatements of fact, as the remainder of this Part demonstrates.<sup>105</sup>

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105. Given time and space constraints, the author has not attempted to analyze every factual charge made by Huber. Nevertheless, all is not well even in the portions of *Galileo's Revenge* that are not critiqued at length in the ensuing pages. As just one example, chapter 6 of *Galileo's Revenge*, entitled "No Immunity: Chemicals Cause Everything," purports to debunk the theory that the human immune system can be compromised by environmental toxins, a theory sometimes referred to as "chemical AIDS." See HUBER, GALILEO'S REVENGE, *supra* note 5, at 92-110 (attacking Dr. Bertram Carnow and his school of "chemical AIDS" enthusiasts and declaring that clinical ecology syndrome is belief, not disease). Huber reports that maverick scientists' theories that industrial poisons can significantly damage the body's autoimmune system are "medical fantasy, not fact." *Id.* at 104. He adamantly insists that the theory that chemicals could so weaken a body's immune system as to facilitate the development of diseases otherwise warded off by the natural immunities

finds no confirmation in studies of people who have been exposed to chemicals at levels millions of times higher than those encountered through environmental pollution. . . . Good science has quite firmly established that, though scads of toxins might theoretically harm immune system cells and proteins, only a very few, usually delivered intimately, knock out immune response while leaving no visible marks on other body systems.

*Id.* at 104-05. Earlier in his book, Huber mocks these clinical ecologists as a mongrel "mix of general practitioners, psychiatrists, urologists, and pediatricians," few of whom had scientific training in laboratory or clinical research. *Id.* at 94.

This appears to be somewhat of an overreaction. In fact, real scientists, including those "with diverse backgrounds in and knowledge of immunology, toxicology, immunotoxicology, risk analysis, and other disciplines," and hailing from distinguished Federal Government research labs like the Centers for Disease Control, the National Cancer Institute, the National Institute of Environmental Health Sciences, and the National Institute for Occupational Safety and Health, as well as the Johns Hopkins University, Case Western Reserve University, the University of Colorado, and Oregon State University, disagree with Huber. SUBCOMM. ON IMMUNOTOXICOLOGY, NATURAL RESEARCH COUNCIL, BIOLOGIC MARKERS IN IMMUNOTOXICOLOGY 1 (1992). Their research, which was sponsored by the U.S. Environmental Protection Agency, the U.S. Public Health Service, the National Institute for Environmental Health Sciences, and the National Institute of Allergy and Infectious Diseases and published by the National Academy of Sciences Press, reached conclusions quite different from Huber's. The Subcommittee on Immunotoxicology of the Committee on Biologic Markers of the National Research Council reported:

There is increasing awareness and concern within the scientific and public communities that chemical pollutants can suppress immune processes and thus cause increased development of neoplastic and infectious diseases. Adverse effects on humans treated with immunosuppressive drugs, numerous studies employing experimental animals, and, to a lesser extent, isolated cases of altered immune function in humans inadvertently or occupationally exposed to xenobiotic [a chemical from a nonbiologic source] substances support these concerns. There is no definitive evidence, as yet, that persons who live near contaminated sites or chemical-manufacturing plants have been immunologically compromised to the extent that they are at increased risk of disease. Nonetheless, there is reason to believe that chemical-induced damage to the [human body's]

## 1. "Cancer-by-pothole"

In chapter three of *Galileo's Revenge*, "The Midas Touch: How Money Causes Disease,"<sup>106</sup> Huber assails what he felicitously calls the "cancer-by-pothole" theory of causation, the notion that cancer can be caused by some sort of physical trauma, such as a blow on the arm, the sudden tug of a seatbelt across the groin during an auto accident, or the bumping of a person's chest against the steering wheel of a vehicle as the vehicle runs into a pothole.<sup>107</sup> Huber highlights forty cases as examples of cancer-by-pothole, surely an impressive number for a seventeen-page chapter, and a number suggesting that a problem of "junk science" has existed in this area of tort law.

Curiously, however, in ten of these forty cases, juries and judges did exactly what Huber thinks they ought to do in every case: they rejected the plaintiffs' junk science claims.<sup>108</sup> That leaves Huber with thirty cases to ridicule. One difficulty with the remaining thirty cases, however, is their timeworn status. With the exception of three cases,<sup>109</sup> every case that Huber mocks as an exemplar of pseudoscience running riot in our modern age, despite the best knowledge made available by modern science, *predates* a 1974 Mayo Clinic study<sup>110</sup> that Huber himself cites as the definitive analysis of the the-

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immune system might be associated with pathologic conditions, some of which might be detectable only after a long latency.

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One should not use such a term as "chemical AIDS" in reference to chemical-induced immune dysfunction. . . . AIDS and the effect of commonly used immunomodulating drugs can be useful, however, as examples of the damage that can result from a compromised immune system in animals and humans.

*Id.* at 63 (emphasis added). Notwithstanding Huber's authoritative pronouncements to the contrary, it appears that real scientists find that there are real problems in this area—illustrating that no factual proposition advanced by Huber, regardless of how plausible and how confidentially asserted, can reliably be counted on as accurately reflecting the whole picture.

106. HUBER, *GALILEO'S REVENGE*, *supra* note 5, at 39-56.

107. *See* HUBER, *GALILEO'S REVENGE*, *supra* note 5, at 53-54 (citing "cancer-by-pothole" decisions in Louisiana and New York).

108. *Slack v. C.L. Percival Co.*, 199 N.W. 323, 326-27 (Iowa 1924); *Stordahl v. Rush Implement Co.*, 417 P.2d 95, 99 (Mont. 1966); *Sikora v. Apex Beverage Corp.*, 119 N.E.2d 601, 601 (N.Y. 1954); *Dennison v. Wing*, 110 N.Y.S.2d 811, 814 (N.Y. App. Div. 1952); *Frankenheim v. B. Altman & Co.*, 177 N.Y.S.2d 302, 304 (N.Y. App. Term. 1958); *Lopresti v. Community Traction Co.*, 117 N.E.2d 2, 7 (Ohio 1954); *Glover v. Rhett Jackson Co.*, 267 S.E.2d 77, 78 (S.C. 1980); *Gambrell v. Burleson*, 165 S.E.2d 622, 626 (S.C. 1969); *Insurance Co. of N. Am. v. Myers*, 411 S.W.2d 710, 710 (Tex. 1966); *Tonkovich v. Department of Labor & Indus.*, 195 P.2d 638, 638 (Wash. 1948).

109. *See* *Hammond v. Fidelity & Casualty Co.*, 419 So. 2d 829, 833 (La. 1982) (permitting plaintiff to recover for cancer aggravated by traumatic injury); *Pezzolanti v. Green Bus Lines*, 494 N.Y.S.2d 168, 169 (N.Y. App. Div. 1985) (upholding cancer-by-pothole award where trauma aggravated preexisting cancer); *Glover v. Jackson Bush Co.*, 267 S.E.2d 77, 78 (S.C. 1980) (rejecting claim that trauma aggravated precancerous condition).

110. *See generally* George R. Monkman et al., *Trauma and Oncogenesis*, 49 MAYO CLINIC PROC. 157 (1974) (reporting that thorough review of literature relating cancer to trauma revealed



ories that cancer can be induced, spread, or accelerated by trauma.<sup>111</sup>

To be sure, as Huber rightly notes, some scientists long ago doubted that a single physical blow, by itself, could cause cancer where none had existed before.<sup>112</sup> And, as Huber also observes, the number of such skeptics grew over the years. But, as evidenced by the pains taken by the Mayo Clinic experts in a 1974 review of previous studies of traumatic cancer, reputable accounts of cancer being caused by a single blow were still being published by well-respected scientists in leading scientific journals into the 1960s.<sup>113</sup> Accordingly, what is particularly noteworthy about the Mayo Clinic report is not that its authors concluded that "there is no evidence to suggest that single uncomplicated trauma can cause cancer,"<sup>114</sup> but that such a conclusion was the stuff of serious scholarly inquiry as late as 1974.

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that although no evidence existed to suggest origin of cancer in single uncomplicated trauma, adequate evidence does exist to suggest that spread of malignant tumors can be affected by trauma). The study is cited in HUBER, *GALILEO'S REVENGE*, *supra* note 5, at 51, 56.

111. One of the cases that predate the 1974 Mayo Clinic study dates from the 1800s: *Jewell v. Ground Truck Ry.*, 55 N.H. 84, 89 (1874).

Three of the cases date from the 1910s: *Santa Ana Sugar Co. v. Industrial Comm'n*, 170 P. 630, 630 (Cal. Dist. Ct. App. 1917); *Louisville Ry. v. Steubing's Adm'r*, 136 S.W. 634, 634 (Ky. Ct. App. 1911); *Thompson v. New Orleans Ry. & Light Co.*, 83 So. 19, 20 (La. 1919).

Four cases date from the 1920s: *Canon Reliance Coal Co. v. Industrial Comm'n*, 211 P. 868, 869 (Colo. 1922); *Austin v. Red Wing Sewer Pipe Co.*, 204 N.W. 323, 323-24 (Minn. 1925); *Gaetz v. City of Melrose*, 193 N.W. 691, 692 (Minn. 1923); *Winchester Milling Corp. v. Sencindiver*, 138 S.E. 479, 480 (Va. 1927).

Two cases date from the 1930s: *Hertz v. Watab Pulp & Paper Co.*, 237 N.W. 610, 611 (Minn. 1931); *Vitale v. Duerbeck*, 92 S.W.2d 691, 695 (Mo. 1935).

Four cases date from the 1940s: *Mooney v. Copper Range R.R. Co.*, 27 N.W.2d 603, 604 (Mich. 1947); *Emma v. A.D. Julliard & Co.*, 63 A.2d 786, 787-88 (R.I. 1949); *Traders & Gen. Ins. Co. v. Turner*, 149 S.W.2d 593, 597-98 (Tex. Civ. App. 1941); *Ellis v. Commonwealth Dep't of Highways*, 28 S.E.2d 730, 731-32 (Va. 1944).

Seven cases date from the 1950s: *Wilson v. Doehler-Jarvis Div. of Nat'l Lead Co.*, 91 N.W.2d 538, 539-40 (Mich. 1958); *Pittman v. Pillsbury Flour Mills, Inc.*, 48 N.W.2d 735, 736 (Minn. 1951); *White v. Valley Land Co.*, 322 P.2d 707, 708 (N.M. 1958); *Glenn v. National Supply*, 129 N.E.2d 189, 190-91 (Ohio Ct. App. 1954); *Menarde v. Philadelphia Transp. Co.*, 103 A.2d 681, 683 (Pa. 1954); *Valente v. Bourne Mills*, 75 A.2d 191, 193 (R.I. 1950); *Boyd v. Young*, 246 S.W.2d 10, 10 (Tenn. 1951).

Four cases date from the 1960s: *National Dairy Prods. Corp. v. Durham*, 154 S.E.2d 752, 753 (Ga. Ct. App. 1967); *Daly v. Bergstedt*, 126 N.W.2d 242, 244-45 (Minn. 1964); *Mattfield v. Ward Baking Co.*, 221 N.Y.S.2d 224, 224 (N.Y. App. Div. 1961); *Baker v. De Rosa*, 196 A.2d 387, 388 (Pa. 1964).

Finally, three cases date from the early 1970s: *Reed v. Mullin Wood Co.*, 274 So. 2d 845, 846-47 (La. Ct. App. 1972), *cert. denied*, 275 So. 2d 729, 791 (La. 1973); *Hanna v. Aetna Ins.*, 259 N.E.2d 177, 177-79 (Ohio Mun. Ct. Dayton 1970); *Koehring-Southern & Am. Mut. Ins. Co. v. Burnette*, 464 S.W.2d 820, 821 (Tenn. 1970).

112. See HUBER, *GALILEO'S REVENGE*, *supra* note 5, at 50-51 (recounting work of Dr. James Ewing, who remained skeptical of single blow cancer causation theory throughout his research beginning in mid-1920s).

113. See Monkman et al., *supra* note 110, at 159, 161 (reporting 1960s studies of trauma-induced or -affected malignancies by various scientists).

114. Monkman et al., *supra* note 110, at 167.

It is as important to pay attention to what the Mayo clinicians did *not* say as it is to what they did say. They did not declare that trauma cannot aggravate or accelerate existing malignancies. Rather, the Mayo Clinic experts confirmed earlier reports, which some industry-funded "mainstream" experts had previously denounced as fraudulent science, that "trauma, in combination with other factors, may act as a cocarcinogen, particularly in the production of skin cancers."<sup>115</sup>

They conceded a point that Huber disingenuously chooses to omit: the fact that "[t]here is adequate evidence suggesting that metastatic spread of malignant tumors can be affected by trauma."<sup>116</sup> Significantly, eighteen of these twenty-seven cases ridiculed by Huber that predate the 1974 Mayo Clinic report—fully two-thirds of the cases discussed by Huber—involved these wholly tenable claims that a trauma aggravated, accelerated, or spread existing malignancies.<sup>117</sup> Huber studiously conceals this fact from readers who lack the time, or the distrust of authors, to check each source relied on by Huber. Instead, Huber leads the reader to assume that the cases he discusses involve *only* the claim that a blow was the sole cause of a cancer.<sup>118</sup>

Huber then states that after courts started questioning single-

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115. Monkman et al., *supra* note 110, at 167.

116. Monkman et al., *supra* note 110, at 167.

117. See *National Dairy Prods. Corp. v. Durham*, 154 S.E.2d 752, 754 (Ga. 1967) (alleging that collision aggravated and accelerated plaintiff's cancer); *Reed v. Mullin Wood Co.*, 274 So. 2d 845, 846 (La. Ct. App. 1972) (awarding worker's compensation claim to plaintiff who alleged that blow in leg caused or aggravated cancer), *cert. denied*, 275 So. 2d 791, 792 (La. 1973); *Wilson v. Doehtler-Jarvis*, 91 N.W.2d 538, 539 (Mich. 1958) (claiming trauma caused or precipitated cancer); *Mooney v. Copper Range R.R. Co.*, 27 N.W.2d 603, 606-07 (Mich. 1947) (alleging that fall from train aggravated or accelerated cancer); *Pittman v. Pillsbury Flour Mills, Inc.*, 48 N.W.2d 735, 738 (Minn. 1951) (alleging that blow to chest from drill caused or aggravated breast cancer); *Hertz v. Watab Pulp & Paper Co.*, 237 N.W. 610, 611 (Minn. 1931) (finding trauma originated or exaggerated and excited cancer); *Gaetz v. City of Melrose*, 193 N.W. 691, 691 (Minn. 1923) (alleging that assault by criminals aggravated preexisting cancer); *Jewell v. Grand Trunk Ry.*, 55 N.H. 84, 95 (1874) (claiming accident caused or accelerated cancer); *White v. Valley Land Co.*, 322 P.2d 707, 711 (N.M. 1958) (alleging that blow to leg aggravated or caused cancer); *Mattfield v. Ward Baking Co.*, 221 N.Y.S.2d 224, 224 (N.Y. App. Div. 1961) (claiming blow aggravated cancer); *Glenn v. National Supply*, 129 N.E.2d 189, 192-93 (Ohio Ct. App. 1954) (claiming blow from mold aggravated cancer); *Baker v. De Rosa*, 196 A.2d 387, 392 (Pa. 1964) (sustaining claim that car accident caused or aggravated lung cancer); *Valente v. Bourne Mills*, 75 A.2d 191, 194 (R.I. 1950) (claiming blow from bobbin caused or aggravated cancer); *Koehring-Southern & Am. Mut. Ins. Co. v. Burnette*, 464 S.W.2d 820, 821-22 (Tenn. 1970) (claiming that traumatic injury to foot activated or accelerated cancer); *Boyd v. Young*, 246 S.W.2d 10, 12-14 (Tenn. 1951) (claiming that injury from heavy lifting caused or aggravated cancer); *Traders & Gen. Ins. Co. v. Turner*, 149 S.W.2d 593, 598 (Tex. Civ. App. 1941) (providing relief for claimant who suffered two blows to testicles that aggravated and accelerated cancer); *Ellis v. Commonwealth Dep't of Highways*, 28 S.E.2d 730, 732-36 (Va. 1944) (claiming that loose rocks hitting knee aggravated cancer); *Winchester Milling Corp. v. Sencindiver*, 138 S.E. 479, 480 (Va. 1927) (alleging fall causing injury to ribcage caused and aggravated rib cancer).

118. HUBER, *GALILEO'S REVENGE*, *supra* note 5, at 43-45.

blow causation in the 1950s and 1960s, "well-advised litigants kept their claims alive by a change of emphasis" with "the new line" that trauma did not cause cancer, but "did *aggravate* or *accelerate* the cancer."<sup>119</sup> Buried more than 150 pages later, in the sole textual endnote to this chapter, Huber adds, "The 'aggravation' theory had been around for much longer, of course, and appears frequently enough in the earlier decisions too. *E.g.*, *Traders and General Insurance Co. v. Turner*, 149 S.W.2d 593 (Tex. Civ. App., Ft. Worth 1941). In the later years, however, it displaces all others."<sup>120</sup>

A reader who has not bothered to go to the library and examine each case cited by Huber, and who for some reason happens to notice this buried endnote, will doubtless assume that the "earlier decisions" in which the aggravation theory appears "frequently enough" are decisions that Huber *does not discuss*, and that this endnote is an academic sidelight not worth putting in text. For in his earlier discussion of supposed cancer-by-pothole cases involving claims of cancer being caused by traumatic blows far faster than medically imaginable, Huber does not provide information that would allow a reader to discern that, "of course," two-thirds of the cases he does discuss actually involve perfectly understandable claims of aggravated cancer. Indeed, in his earlier discussion Huber misrepresents the *Traders v. Turner* case (correctly described in Huber's buried endnote as an *aggravated* cancer case), as a case in which "[t]wo severe blows to a man's testicles *caused* malignant cancer seven days later."<sup>121</sup> Reports of such bizarre cases are the mainstay of Huber's book, but they are entirely at odds with reality and require affirmative deception by Huber to have any rhetorical effectiveness.

Moreover, setting aside the Mayo Clinic's own recognition that tumors can be affected by trauma, the fact that some plaintiffs claimed that their cancer was caused, in whole or in part, by trauma is not a convincing demonstration of their greed or their willful disregard of "good science." Instead, it may merely be a reflection that at the time these claims were made, even the best of scientists were not certain what could or could not cause cancer.<sup>122</sup> In ridiculing yesterday's courts for having permitted yesterday's scientists to

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119. HUBER, *GALILEO'S REVENGE*, *supra* note 5, at 52-53 (emphasis added).

120. HUBER, *GALILEO'S REVENGE*, *supra* note 5, at 234 n.68.

121. HUBER, *GALILEO'S REVENGE*, *supra* note 5, at 43 (emphasis added).

122. Huber's own selection of cases reveals a pattern that as the science of oncology matured and developed, scientists could be more definitive about the causes of cancer. Simply put, the more experience scientists gained, the more they understood that although trauma could aggravate, accelerate, and spread cancer, it could not, by itself, cause a tumor to develop where none had existed before. See HUBER, *GALILEO'S REVENGE*, *supra* note 5, at 42-45

testify about a theory that today's scientists regard as false, Huber proves himself to be the classic Monday-morning quarterback, heaping scorn on yesterday's scientists (and lawyers and judges) for not knowing then what everyone knows now.<sup>123</sup>

The question remains: What about the three out of forty cases criticized by Huber that do postdate the 1974 Mayo Clinic study? Unfortunately for Huber, none of the three cases involved the now-widely discredited proposition that cancer can be caused by a single blow. Rather, each case concerned the unassailable view that preexisting cancerous conditions can be activated, precipitated, or spread as a result of a physical injury.<sup>124</sup> And one of those claims was rejected by the appellate court.<sup>125</sup> If there is any nonsense regarding Huber's "cancer-by-pothole" cases, it lies in Huber's distorted descriptions of them, not in the underlying claims of the litigants.

## 2. *Cerebral palsy*

The same holds true for chapter five of *Galileo's Revenge*, "Gadgets and Knives: Cashing in on Magical Cures." Huber argues in this chapter that obstetric malpractice accounts for a negligible number of cerebral palsy (CP) cases and, consequently, that: (1) most suits brought by plaintiffs that allege medical malpractice as the cause of infant CP are frivolous,<sup>126</sup> and (2) efforts to reduce CP by improving obstetrical care (such as through the use of electronic fetal monitoring devices) are nothing more than a cruel and expensive hoax.<sup>127</sup> Huber asserts that most CP babies "are doomed long before an obstetrician comes near them."<sup>128</sup> This contention relies most heavily

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(describing early cancer litigation). In other words, as scientists learned more about the causes of cancer, plaintiffs ceased making claims that lacked a scientific basis.

123. Huber's showcasing of the work of pathologist James Ewing, Huber's hero of American science, who almost singlehandedly revealed the cancer-by-pothole theory to be a fraud, HUBER, *GALILEO'S REVENGE*, *supra* note 5, at 50-51, is puzzling. Surely, that Ewing ultimately turned out to be right does not establish that it was "heresy" or "junk science" to disagree with Ewing when he first wrote in the mid-1920s. Many other scientists have turned out to be wrong in their attempts to debunk perceived dangers—for example, the scientists who in the early days of controversy over asbestos, cigarettes, silicone, and IUDs stated the belief that these products were not harmful.

124. See *Hammond v. Fidelity & Casualty Co.*, 419 So. 2d 829, 832 (La. 1982) (holding that doctor's testimony that tumor existed prior to injury but that injury precipitated disability supported compensation for disability claim); *Pezzolanti v. Green Bus Lines*, 494 N.Y.S.2d 168, 169 (1985) (holding that evidence supported claim that trauma contributed to disabling pain from tumor); *Glover v. Rhett Jackson Bush Co.*, 267 S.E.2d 77, 79 (S.C. 1980) (rejecting claim that one blow to arm had aggravated tumor).

125. *Glover*, 267 S.E.2d at 80.

126. HUBER, *GALILEO'S REVENGE*, *supra* note 5, at 76-82.

127. See HUBER, *GALILEO'S REVENGE*, *supra* note 5, at 78-85 (criticizing rush in medical and legal communities to view use of electronic fetal monitoring as preventative "cure" for cerebral palsy).

128. HUBER, *GALILEO'S REVENGE*, *supra* note 5, at 82.

on a study appearing in 1986 in *The New England Journal of Medicine*,<sup>129</sup> which Huber cites six times in his seventeen-page chapter, far more than any other source.<sup>130</sup>

This important study by Drs. Karin Nelson and Jonas Ellenberg is praised by Huber as "the largest ever of its kind."<sup>131</sup> Huber further asserts that "[t]he results of a study of this size are about as solid and certain as medical science can supply."<sup>132</sup> Huber cites Nelson and Ellenberg for their finding that "no factor related to labor and delivery is associated with more than 2 percent of the risk."<sup>133</sup> Huber proclaims that this study brings a definitive end to the century-long debate over the causes of CP.<sup>134</sup> To do this, however, Huber resorts to the type of egregious selective citation that might trigger sanctions for a college term paper.

First, Huber fails to inform the reader that the editors of *The New England Journal of Medicine*, in the very issue that published the Nelson and Ellenberg article, noted significant analytical flaws in the article. In a rather unusual step, the editors paired the publication of the Nelson and Ellenberg study, which they obviously regarded as provocative, with their own critique of the article's underlying analytical premise. The author of the editorial, Dr. Nigel Paneth of Columbia University's College of Physicians and Surgeons, entitled a section of his essay: "Could the methods used by Nelson and Ellenberg have obscured the causal role of birth asphyxia?"<sup>135</sup> Paneth's answer to this question disclaimed the methodology employed in the Nelson and Ellenberg study.<sup>136</sup>

The causal role of birth asphyxia is obscured in the Nelson and Ellenberg article, Paneth said, because "the predictive power of a variable and its correct role in a causal sequence are not necessarily interchangeable."<sup>137</sup> Nelson's and Ellenberg's error was to ascribe nearly all CP causation to factors that occur before labor and delivery because those prelabor factors *predict* CP.<sup>138</sup> In other words, Dr. Paneth criticized Nelson's and Ellenberg's study for confounding

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129. Karin B. Nelson & Jonas H. Ellenberg, *Antecedents of Cerebral Palsy: Multivariate Analysis of Risk*, 315 NEW ENG. J. MED. 81 (1986).

130. HUBER, GALILEO'S REVENGE, *supra* note 5, at 240-43 nn.25, 28, 30, 35, 52, 54.

131. HUBER, GALILEO'S REVENGE, *supra* note 5, at 82.

132. HUBER, GALILEO'S REVENGE, *supra* note 5, at 83.

133. HUBER, GALILEO'S REVENGE, *supra* note 5, at 83.

134. HUBER, GALILEO'S REVENGE, *supra* note 5, at 82-83.

135. Nigel Paneth, *Birth and the Origins of Cerebral Palsy*, 315 NEW ENG. J. MED. 124, 125 (1986).

136. *See id.* (cautioning that "[i]f a variable present earlier is strongly associated with a true cause of disease, it may well substitute for that cause if entered first in a multivariate model").

137. *Id.*

138. *Id.*

prediction with cause: the fact that certain prebirth conditions unrelated to delivery may predict CP does not mean that physicians cannot overcome these problems through state-of-the-art birth procedures that can ensure a healthy baby. Thus, failure to use these procedures may constitute a proximate cause of CP. Dr. Paneth used the colorful analogy of a pirate walking the plank to illustrate his point: just because "walking the plank" predicts the death of a pirate, it does not follow that water is not a proximate cause of the pirate's drowning.<sup>139</sup> Similarly, just because prelabor factors are associated with CP does not mean that intrapartum obstetric practice is not the chief cause of (or a contributing factor in) some or even many cases of CP. Nelson and Ellenberg's conclusion that the "results suggest a relatively small role for factors of labor and delivery in accounting for CP in this population"<sup>140</sup> muddles prediction with cause.

Second, despite his extensive research into, and citation to, contemporary articles on CP, Huber fails to acknowledge that one of the co-authors of the Nelson and Ellenberg study essentially recanted her conclusion two years later.<sup>141</sup> The article ignored by Huber is a 1988 analysis by Nelson, published in the editor's column of *Journal of Pediatrics*, that conflicts with her 1986 article on the etiology of CP. She began her editorial by stating unequivocally, "[W]e know, on the basis of experimental and clinical evidence, that birth asphyxia *can* cause CP."<sup>142</sup> Nelson's 1988 assertion sharply contrasted with her minimization of labor and delivery factors in her 1986 study.<sup>143</sup> In the 1988 article, she explained that "[d]epending on the criteria employed, then, the estimate of the proportion of CP associated with intrapartum asphyxia in births in the NCPP [the same data pool used in the Nelson and Ellenberg study of 1986] was in the range of 3% to 13% and did not exceed 21%."<sup>144</sup> These statistics are miles apart from those cited in the article she co-authored just two years earlier. In 1986, Nelson and Ellenberg professed that "[t]he risk of cerebral palsy associated with each factor related to labor and delivery alone was under 2 percent in all

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139. *Id.*

140. Nelson & Ellenberg, *supra* note 129, at 86.

141. See Karin B. Nelson, *What Proportion of Cerebral Palsy Is Related to Birth Asphyxia?*, 112 J. PEDIATRICS 572, 573 (1988).

142. *Id.* at 572.

143. See Nelson & Ellenberg, *supra* note 129, at 86 (concluding that there is "relatively small role for factors of labor and delivery in accounting for cerebral palsy in [the population studied]").

144. Nelson, *supra* note 141, at 573.

cases.”<sup>145</sup> Nelson’s honorable recantation of her earlier claim is in keeping with the highest traditions of scholarship, both in the natural sciences and elsewhere.

Huber’s failure to apprise the reader of either Paneth’s editorial in *The New England Journal of Medicine* or Nelson’s disavowal of her earlier study is anything but honorable. Huber can hardly claim inadvertence; he was well aware of both the editorial criticisms and Nelson’s recantation because he cited both sources earlier in his chapter as background on the problem of CP.<sup>146</sup>

Huber’s failure to convey significant information contrary to his conclusions is hardly limited to his discussion of CP. An even more egregious example of this practice is found later in the book in a discussion of the \$5.1 million award for spermicide-caused birth defects in *Wells v. Ortho Pharmaceutical Corp.*<sup>147</sup> Huber packages the case as a dramatic example of junk science at work, where a credulous jury is persuaded to render a “spectacular verdict” based on a single, tentative medical study, after which the authors of that study react in horror, confessing that the study was unsupported, inadequate, and should have been left unpublished.

On this subject, in marked contrast to his discussion of the evidence on cerebral palsy, Huber displays a keen interest in focusing the reader’s attention on retractions. He states that in *Wells*,

lawyers won a spectacular \$5.1 million verdict against the Ortho Pharmaceutical Corporation, largely on the strength of a single study that had very tentatively suggested that spermicides might cause birth defects. A year after the verdict, however, the several authors of that study spoke out again. One acknowledged that their work “was not corroborated by subsequent studies,” and that their “study’s definition of exposure to spermicide near the time of conception was grossly inaccurate.” Another frankly conceded: “I believe our article should never have been published. In our present litigious environment, the reservations and qualifi-

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145. Nelson & Ellenberg, *supra* note 129, at 83.

146. HUBER, GALILEO’S REVENGE, *supra* note 5, at 238 nn.2, 4. Although citing these sources, Huber resolutely and disdainfully ignores their content. Though Huber cites Nelson’s 1988 article for the number of children born with CP, he cloaks the fact that Nelson had restated her views in a way that undermined rather than supported Huber’s thesis that obstetric malpractice accounts for a negligible number of CP cases. *Id.* at 76, 238 n.2. Similarly, Huber conveniently chooses to ignore *The New England Journal of Medicine*’s editorial doubts about the Nelson and Ellenberg study. Instead, Huber merely cites the Paneth editorial as a source for the history of theories of the etiology of CP. *Id.* at 238 n.4. Worse, in this latter footnote Huber disingenuously presents the dated authority, William Little, M.D., to represent the medical opinion that CP is related to intrapartum events. *Id.* Little, in 1861, theorized that CP was caused by “trauma and other stresses during labor and delivery.” *Id.* at 76.

147. 615 F. Supp. 262, 266 (N.D. Ga. 1985), *aff’d*, 788 F.2d 741 (11th Cir.), *cert. denied*, 479 U.S. 950 (1986).

cations written into a published report are often ignored, and the article is used as 'proof' of a causal relationship."<sup>148</sup>

A close examination of *Wells*, and of the retractions cited by Huber, reveals three flagrant errors. First, contrary to Huber's effort to imply that *Wells* illustrates the work of a bamboozled, runaway jury, resulting in a "spectacular . . . \$5.1 million verdict,"<sup>149</sup> the parties in fact waived the right to a jury. *Wells* was decided by a federal district judge who issued a twenty-eight page opinion analyzing all the evidence and specifically concluding that the plaintiffs "presented competent and credible medical and scientific evidence" showing that the defendant's spermicide had caused the precise birth defects in question and that the plaintiffs had presented "the most reasonable and believable" testimony, given that much of the defendant's evidence "lacked credibility because it reflected bias or inconsistency."<sup>150</sup> This decision was unanimously upheld by three federal appellate judges, and the U.S. Supreme Court denied review.

Second, Huber suggests, without citation, that the award was handed out "largely on the strength of a single study."<sup>151</sup> Yet twenty-one studies were submitted into evidence, ten by the plaintiffs and eleven by the defendant.<sup>152</sup> Only one of the four experts called by plaintiffs even mentioned the study seized on by Huber (the "Jick study"), and this expert discussed a total of six studies tending to support causation.<sup>153</sup> Far from the intense focus on the Jick study that Huber claims animated the *Wells* case, the district judge indicated that he was favorably impressed by four of the studies cited by the plaintiffs' experts, including the Jick study, but that he "did not need to consider as substantive evidence" any of the studies offered on either side because he was basing his decision on the overall testimony of the experts on both sides.<sup>154</sup>

Third, Huber suggests that all of "the several authors" of the Jick study later repudiated their conclusions, expressing their detached

148. HUBER, GALILEO'S REVENGE, *supra* note 5, at 174 (footnotes omitted).

149. The term "verdict" obviously refers to the product of a jury trial. See, e.g., BLACK'S LAW DICTIONARY 1398 (6th ed. 1990) ("The formal decision or finding made by a jury, impaneled and sworn for the trial of a cause, and reported to the court. . . ."); THE AMERICAN HERITAGE DICTIONARY 1983 (3d ed. 1992) ("The finding of a jury in a trial."); THE COMPACT EDITION OF THE OXFORD ENGLISH DICTIONARY 3610 (1971) ("The decision of a jury in a civil or criminal cause upon a decision which has been submitted to their judgment.").

150. *Wells v. Ortho Pharmaceutical Corp.*, 615 F. Supp. 262, 292-94 (N.D. Ga. 1985), *aff'd*, 788 F.2d 741 (11th Cir.), *cert. denied*, 479 U.S. 950 (1986).

151. HUBER, GALILEO'S REVENGE, *supra* note 5, at 174.

152. See *Wells*, 615 F. Supp. at 269-91.

153. *Id.* at 269-73 (summarizing testimony of Dr. Bruce Buehler); *id.* at 272 & n.12 (noting that "Dr. Buehler also discussed the 1981 Jick article") (citing Hershel Jick et al., *Vaginal Spermicides and Congenital Disorders*, 245 JAMA 1329 (1981)).

154. *Id.* at 292 & n.38.



professional horror at the outcome of *Wells*. He offers, as examples of this repudiation, the comments of "one" of the authors, and then "another" of the authors, printed in letters to the journal that originally published the study.<sup>155</sup> But contrary to Huber's image of a unanimous retraction published by "the several authors," the Jick study in fact had nine authors, and only the two authors cited by Huber expressed any misgivings about their study. Worse still, in a joint letter, three other authors of the Jick study sharply criticized the "one" author (who had testified as a paid expert witness for the defendant in *Wells*) for being an advocate rather than a scientist, and strongly defended their original study.<sup>156</sup>

Most damning, Huber can hardly claim that he inadvertently overlooked the rejoinder written by these three authors. The joint letter not only appears on the same page of the same medical journal as the criticisms quoted by Huber; it is actually sandwiched in between the letters of "one" and "another" author.<sup>157</sup>

In sum, Huber displays remarkable powers of selective perception and recitation. In discussing cerebral palsy, Huber fails even to mention the repudiation by one of two authors of the key study he himself relies on in his analysis. But in discussing the *Wells* case Huber obsesses about a study's repudiation by two of nine authors and ignores a defense of the original study and a rebuttal to the criticism by three other authors of that study, even though this was only one of many studies cited by the plaintiffs, and even though the *Wells* case was decided by a district judge who ultimately chose not to consider *any* of the studies as evidence.

According to Huber, junk scientists "discard enough 'bad' data to make the remaining 'good' points look important. . . . Professional statisticians call this 'data dredging.'" <sup>158</sup> Huber's scholarship falls

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155. HUBER, GALILEO'S REVENGE, *supra* note 5, at 174.

156. The district court in *Wells* found that Huber's "one" author, Dr. Richard N. Watkins, was simply "not credible," finding it "perplexing that a physician would risk his professional reputation by signing his name to a study about which he had serious reservations," as Watkins claimed he did at the time of the study, and finding it suspicious that Watkins had waited four years, until he was a paid expert witness in court, to express these misgivings. *Wells*, 615 F. Supp. at 282. Similarly, the three authors who rebutted Watkins stated, in a joint letter, that, "Dr. Watkins has selectively reclassified the exposure status of exposed cases without engaging in a similar effort for exposed noncases. The technique is one used in advocacy, but it is not good science." Hershel Jick et al., *In Reply*, 256 JAMA 3095, 3095-96 (1986).

In defense of their original study, these three authors stated that since the study "[a] number of authors have found associations between spermicide use and both chromosomal anomalies and limb anomalies very close to those reported by us," and that "[i]n hindsight, we still believe that our report did address plausible hypotheses, was valid in its conception and conduct, was circumspectly reported, and is consonant with much material published both before and since." *Id.*

157. *Id.*

158. HUBER, GALILEO'S REVENGE, *supra* note 5, at 27.

short of the standards he sets for everyone else.

### 3. *Bendectin*

Huber frequently invokes the *National Enquirer* in his chapter on Bendectin.<sup>159</sup> Given Huber's enormous distortions of the scientific record on traumatically induced or aggravated cancer, on cerebral palsy, and on the *Wells* spermicide case, truly enquiring minds will be on the lookout for similar distortions in Huber's review of the Bendectin litigation.<sup>160</sup>

According to Huber, "[a] large volume of published epidemiological data has previously revealed no statistically significant association between Bendectin and birth defects."<sup>161</sup> Junk scientists, however, used a chilling off-the-cuff assessment that Bendectin is "like [T]halidomide," the terrible drug that caused babies to be born "with dolphinlike flippers,"<sup>162</sup> as well as "some scattered laboratory tests" and other tangential data, to come up with a theory that Bendectin also causes birth defects. As the subtitle to Huber's chapter relates, what followed was a "Massed Legal Attack"<sup>163</sup> in which Richardson-Merrell, Inc. (Merrell), the manufacturer of Bendectin, was subjected to ruinous litigation by greedy plaintiffs and their "villainous" lawyers.<sup>164</sup> These compatriots employed junk science to force a blameless company to pull a valuable antinausea product from the market.<sup>165</sup> Litigation continued for several more years before the company was finally vindicated by "wise" judges who ultimately concluded that such nonsense must end.<sup>166</sup>

Huber's tale is gripping, but has at least three major faults that prevent this chapter from being taken seriously as an analysis tending to establish Huber's thesis that "junk science" is common and represents the "most insidious" of all problems within our liability system. First is a pervasive flaw that by now is easily spotted in the book: Huber's hyperbolic, sarcastic, selective, anecdotal, *ad hoc* and at times *ad hominem* argument style, which makes for entertaining reading but leaves the reader wondering whether both sides of the

159. HUBER, GALILEO'S REVENGE, *supra* note 5, at 111-13, 129.

160. The author was counsel of record in one Bendectin case that reached the Supreme Court, *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 951 F.2d 1128 (9th Cir. 1991), *cert. granted*, 113 S. Ct. 320 (1992). The author has also assisted plaintiffs' attorneys (including Barry J. Nace, *see infra* note 167) in several other Bendectin cases, on petitions for certiorari and on briefs in federal courts of appeals.

161. HUBER, GALILEO'S REVENGE, *supra* note 5, at 113.

162. HUBER, GALILEO'S REVENGE, *supra* note 5, at 112.

163. HUBER, GALILEO'S REVENGE, *supra* note 5, at 111.

164. HUBER, GALILEO'S REVENGE, *supra* note 5, at 113-22.

165. *See* HUBER, GALILEO'S REVENGE, *supra* note 5, at 127.

166. *See* HUBER, GALILEO'S REVENGE, *supra* note 5, at 122-27.

story are being told. Huber's rhetorical technique is to string together news reports and court decisions so as to chronicle the history of the litigation in a manner that makes the scientific evidence proffered by plaintiffs look ridiculous, and the ethics of selected attorneys and experts involved on the plaintiffs' side appear reprehensible. Notably, there is no indication that Huber interviewed any of the plaintiffs' attorneys he goes out of his way to castigate, and in at least one instance Huber has declined to defend himself against detailed charges that his account of the Bendectin litigation is filled with "many misstatements" and that his understanding of the subject in general is "ridiculously immature."<sup>167</sup> A recent extensive review of the history of the Bendectin litigation written by Professor Joseph Sanders, who *did* take care to consult with main participants on both sides, covers many of the same events documented by Huber in an evenhanded manner that amply demonstrates the one-sided and partisan nature of Huber's analysis.<sup>168</sup>

Second, Huber erroneously invites the reader to conclude that, if it can be shown that plaintiffs' evidence on causation in Bendectin cases ultimately turned out by the late 1980s to be disproved by an overwhelming array of epidemiological studies, then the Bendectin claims must have been baseless, and pure "junk science," from the beginning. But there is no support for this view. Despite Huber's extended efforts to lampoon the early proof put forward by plaintiffs, as Professor Sanders has noted, "[w]e should expect that the science will be relatively poorly developed in the early stages of litigation," and that only later will litigation spur the production of "a richer body of scientific evidence."<sup>169</sup> As Professor Michael D. Green notes in a recent review of Bendectin evidence, "It is important to emphasize that . . . in 1977 when Bendectin litigation first began . . . there was a paucity of decent epidemiologic studies and unsettling animal studies regarding possible toxicity."<sup>170</sup> Professor

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167. Letter from Barry J. Nace, Esq., to Peter W. Huber, Esq. 1, 3 (Feb. 19, 1992) (on file with *The American University Law Review*). Mr. Nace, a respected trial lawyer serving as president of the Association of Trial Lawyers of America for 1993-1994, is one of the "villainous" lawyers portrayed throughout Huber's chapter in a most unflattering light. In his letter Nace noted that Huber had never contacted him in any manner, and he listed a variety of serious misrepresentations of the record. *Id.* at 1-4. In closing, Nace stated, "If you wish to debate this subject somewhere, just let me know. I would be happy to debate it with you . . . [e]ither from a scientific or legal standpoint—or both." *Id.* at 3. Fifteen months later, Nace had not received any response. Telephone Interview with Barry J. Nace, Esq. (May 19, 1993).

168. See Joseph Sanders, *The Bendectin Litigation: A Case Study in the Life Cycle of Mass Torts*, 43 *HASTINGS L.J.* 301, 311-86 (1992). The acknowledgement footnote to Sanders' article thanks W. Glenn Forrester, Merrell's lead in-house attorney, and Barry Nace, a prominent plaintiffs' attorney in Bendectin cases, for their help. *Id.* at 301 n.\*.

169. *Id.* at 331.

170. Green, *supra* note 61, at 677. Professor Green notes that these and other factors "led

Green concludes, in direct answer to the thesis set forth by Huber: "Bendectin did not begin, as some have said, as a case of avaricious lawyers pursuing a drug whose safety was well established over a long period of time by numerous solid scientific studies."<sup>171</sup>

The reason this is so, these scholars explain, is that the early Bendectin litigation must be placed in the context of both Merrell's lack of adequate original testing and the company's poor track record on the safety of its drugs and the integrity of its dealings with the FDA. Remarkably, prior to Merrell's marketing of Bendectin in 1956, no substantial safety testing was done on whether Bendectin might cause birth defects; the FDA required no testing, given that each of the three prescription components of Bendectin had previously been approved for use in adults.<sup>172</sup> Indeed, the prevailing scientific belief at this stage was that the womb was a safehouse against environmental dangers.<sup>173</sup> Conventional scientific wisdom proved to be wrong just a few years later, with "the appearance of an epidemic of limb-reduction malformations" in babies whose mothers had taken the "presumably harmless sedative-hypnotic drug [T]halidomide," which made clear the vulnerability of human embryos "to certain environmental agents even though these have negligible or no toxic effects in postnatal individuals."<sup>174</sup> The Thalidomide tragedy spurred the rapid development of teratology, the study of teratogens, or substances that produce malformations in human fetuses.<sup>175</sup>

Merrell happened to be the American licensee of Thalidomide and thus was implicated in the public concern surrounding that tragedy.<sup>176</sup> Even worse for Merrell's reputation, in the following

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plaintiffs' lawyers in the late 1970s and early 1980s to believe that they had a genuine mass toxic [tort case] staring them in the face," although based on the scientific record that emerged a decade later, he opines, it either "appears they were wrong" or that "Bendectin, if it has any teratogenic effect, has quite a weak one." *Id.* at 677 n.155.

171. *Id.*

172. Sanders, *supra* note 168, at 317, 321.

173. See James G. Wilson, *Current Status of Teratology*, in HANDBOOK OF TERATOLOGY 47, 47 (James G. Wilson & F. Clarke Fraser eds., 1977) (discussing 1940s view that womb was impervious to harmful influences). Although the embryos of amphibians, fish, and chickens had been shown "to be quite susceptible to unfavorable influences during development," these tests "were not generally accepted as purporting similar vulnerability for higher animals." *Id.* at 47. Instead, "[i]t was widely assumed in biology and in medicine that the mammalian embryo developed within the virtually impervious shelter of the uterus and the maternal body where it was protected from extrinsic factors." *Id.*

174. Wilson, *supra* note 173, at 48.

175. Wilson, *supra* note 173, at 48-49.

176. Merrell had attempted to convince the FDA that Thalidomide was safe to market in the United States, but FDA suspicion and delay resulted in Merrell being given only initial limited authorization for investigational use, thus sparing the American public the large number of deformed babies witnessed in other countries. Sanders, *supra* note 168, at 313-14. Still, even while it awaited what it hoped would be final FDA approval, Merrell "engaged in

year, 1962, the FDA discovered that Merrell had misrepresented numerous animal studies as demonstrating the complete safety of MER/29, an anti-cholesterol drug, when in fact Merrell knew that most animals exposed to the drug developed cataracts and other side effects.<sup>177</sup> Merrell nevertheless continued to market the drug for nearly two years while reports of identical injuries in humans accumulated.<sup>178</sup> As a result, Merrell and three of its scientists were indicted for lying to the FDA. The company subsequently received the maximum possible fine and its scientists received suspended sentences.<sup>179</sup> Merrell also paid tens of millions of dollars in damages as a result of civil litigation (including a sizable punitive damages award), settling more than 95% of the cases against it, and the widespread publicity understandably led to public condemnation of Merrell.<sup>180</sup>

Despite Huber's failure to address this history, Merrell's checkered past was obviously pivotal to the initial development of the Bendectin litigation. Once suspicion began growing during the 1970s among medical authorities that Bendectin might be a cause of birth defects,<sup>181</sup> and once it was learned that even after the MER/29 episode Merrell performed wholly inadequate testing of the safety of Bendectin and arguably hid negative results from the FDA, just as it did with MER/29,<sup>182</sup> it was hardly a stretch to "conclude[] that,

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what might charitably be called extremely lax behavior" in distributing 2.5 million Thalidomide pills to 20,000 persons, including 624 pregnant women, leading to at least ten deformed Thalidomide babies. *Id.* at 314.

177. Sanders, *supra* note 168, at 315.

178. Sanders, *supra* note 168, at 315-16.

179. Sanders, *supra* note 168, at 315-16.

180. Sanders, *supra* note 168, at 315-16; *see also* Toole v. Richardson-Merrell, Inc., 60 Cal. Rptr. 398, 404-08 (Ct. App. 1967) (summarizing voluminous evidence of Merrell's egregious actions); RALPH E. FINE, THE GREAT DRUG DECEPTION: THE SHOCKING STORY OF MER/29 AND THE FOLKS WHO GAVE YOU THALIDOMIDE 23, 151 (1972) (describing criminal proceedings against Merrell for falsifying scientific data submitted to FDA); Richard A. Merrill, *Compensation for Prescription Drug Injuries*, 59 VA. L. REV. 1, 40-43 (1968) (providing brief synopsis of five reported MER/29 cases); Paul D. Rheingold, *The MER/29 Story—An Instance of Successful Mass Disaster Litigation*, 56 CAL. L. REV. 116 (1968) (containing general summary of Merrell wrongdoing).

181. Sanders, *supra* note 168, at 317-18.

182. Merrell performed only limited and sporadic animal *in vivo* testing of Bendectin and ignored a researcher's suggestion that more testing be done, despite its recent history of problems with Thalidomide and MER/29. Sanders, *supra* note 168, at 333-36. These actions helped to "fuel speculation by plaintiffs that if they only dug deep enough, they would find a cover-up." *Id.* at 333 n.152. Moreover, "[t]he first epidemiologic study performed in 1963 by a Merrell employee and relied on by Merrell for fifteen years was so shoddy in method and interpretation that even Merrell has conceded its lack of validity; it has provided an inviting target for plaintiffs' attorneys' attacks and claims for punitive damages." Green, *supra* note 61, at 677 n.155.

Merrell's initial animal testing was so inadequate in light of the low dosages administered to the animals that one plaintiffs' expert in a recent trial termed the tests not only "useless," but "irresponsible." Transcript of Record at 49-50, *Havner v. Merrell Dow Pharmaceuticals, Inc.*

with respect to this firm, where there was smoke there must be fire," and that there was strong ground to believe that Merrell was implicated in yet a third harmful drug and was again covering up known, serious risks.<sup>183</sup> Huber simply makes no effort to demonstrate that, *in light of what was known when the Bendectin litigation commenced*, the early cases can be condemned as "junk science."

Third and finally, beyond the inadequacy of Huber's discussion of the early stage of the Bendectin litigation, Huber also fails to address enough of the substance of the Bendectin litigation in its mature state so that the reader can adequately assess the nature of the controversy and reach his or her own conclusion about whether legitimate scientific issues exist. Such a project is well beyond the scope of this Article, but the shallow and one-sided nature of Huber's analysis can readily be grasped by comparing his chapter with the analysis of Professor Sanders<sup>184</sup> and with portions of the briefs and Joint Appendix analyzing the nature of the four different types of data in the Bendectin case recently considered by the U.S. Supreme Court.<sup>185</sup>

Within the scope of this Article, it is important to note one central flaw in Huber's framework of analysis. As to Merrell's central defense in these cases, Huber is correct that a significant number of epidemiological studies have been published on Bendectin, none of which (in the view of the authors of those studies) individually establishes with "statistical significance" at the 95% certainty level that Bendectin is linked to birth defects.<sup>186</sup> Indeed, three separate federal courts of appeals have given this characterization of the epidemiological record determinative weight in ruling against Bendectin

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(Tex. 214th Dist. Ct. Sept. 27, 1991) (No. 88-3915-F). Evidence exists that even at these low doses the tests indicated that Bendectin was a teratogen, *id.* at 51-52, and that in reaction to those results Merrell researchers doctored the raw data and substituted a sanitized version to the FDA that either understated or completely failed to report malformations in the fetuses of several animals receiving doses of Bendectin, *id.* at 30-41, actions arguably typical of a company as to which the FDA stated in reaction to the MER/29 incident: "[W]e cannot consider information submitted by this firm as reliable without thorough verification." *Id.* at 58. This and similar evidence led in a recent case to the entry of a \$15 million punitive damages award against Merrell (on compensatory damages of \$3.75 million), after full post-trial review. *See* Final Judgment in *Havner* (No. 88-3915-F) (now on appeal).

183. Sanders, *supra* note 168, at 316.

184. Sanders, *supra* note 168, at 321-48.

185. *See* Brief for Petitioners at 2-12, *Daubert v. Merrell Dow Pharmaceuticals, Inc.* (U.S. Dec. 2, 1992) (No. 92-102) (summarizing nature of evidence in Bendectin cases); Joint Appendix at 53-207, *Daubert* (No. 92-102) (reprinting affidavits of plaintiffs' experts in *Daubert*); Brief for Respondent at 2-9, 35-48, *Daubert* (No. 92-102) (rebutting opening brief); Joint Appendix at 31-44, *Daubert* (No. 92-102) (reprinting affidavit of defendant's expert in *Daubert*); Reply Brief of Petitioners at 2-5, *Daubert* (No. 92-102) (answering respondent's factual analysis).

186. HUBER, GALILEO'S REVENGE, *supra* note 5, at 113.

plaintiffs.<sup>187</sup>

But Huber rests too readily on these holdings for his analysis to withstand scrutiny. Apart from a failure to give serious attention to the testimony of a number of experts on plaintiffs' side who evaluate the epidemiological data in light of other sources of information on the drug,<sup>188</sup> Huber ignores the elementary point that any failure of epidemiology to establish the 95% certainty level in no way affirmatively demonstrates the *safety* of Bendectin. Far from there being a consensus on the safety of Bendectin based on extant epidemiological studies, the U.S. Court of Appeals for the Sixth Circuit recently observed in a Bendectin case that Merrell "overstates the persuasive power of these statistical studies," that these studies are "by no means conclusive," and that "[a]n analysis of this evidence demonstrates that it is possible that Bendectin causes birth defects even though these studies do not detect a significant association."<sup>189</sup> Contrary to the impression left by Huber's chapter, the current status of Bendectin litigation in the lower federal courts reveals a serious controversy within the scientific community and the courts on causation, not a set of claims that plausibly may be termed "junk science."<sup>190</sup>

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187. See *Brock v. Merrell Dow Pharmaceuticals, Inc.*, 874 F.2d 307, 313-15, *modified*, 884 F.2d 166 (5th Cir. 1989), *cert. denied*, 494 U.S. 1046 (1990); *Richardson v. Richardson-Merrell, Inc.*, 857 F.2d 823, 829-32 (D.C. Cir. 1988), *cert. denied*, 493 U.S. 882 (1989); *Lynch v. Merrell-National Lab.*, 830 F.2d 1190, 1196-97 (1st Cir. 1987). The Ninth Circuit in *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 951 F.2d 1128 (9th Cir. 1991), *cert. granted*, 113 S. Ct. 320 (1992), cited these cases approvingly but based its holding against the plaintiffs on the failure of one of their experts to publish her epidemiological opinion, not on the absence of a "statistically significant" epidemiological study standing alone. *Id.* at 1130.

188. See *supra* notes 184-85 (providing analyses of chemical structure and *in vitro* and *in vivo* animal data).

189. *Turpin v. Merrell Dow Pharmaceuticals, Inc.*, 959 F.2d 1349, 1357 (6th Cir.), *cert. denied*, 113 S. Ct. 84 (1992); see also *DeLuca v. Merrell Dow Pharmaceuticals, Inc.*, 911 F.2d 941, 945-49 (3d Cir. 1990) (expressing similar caution about overstating value of epidemiological data); Brief of Professor Kenneth Rothman et al. as Amici Curiae in Support of Petitioners, *Daubert* (No. 92-102) (characterizing concept of statistical significance as "misleading," "never descriptive," and imprecise when analyzing epidemiological data).

Although the Sixth Circuit found in *Turpin*, with respect to the animal data on Bendectin, that "[a]nimal studies often comprise the backbone of evidence indicating biological hazards, and their legal value has been recognized by federal courts and agencies," the court determined that on the basis of the specific expert affidavits proffered in that case, the evidence was insufficient to go to the jury. *Id.* at 1360.

190. As the Sixth Circuit summarized the case law as of March, 1992, "Four federal circuits have held that plaintiffs failed as a matter of law to establish causation . . . [but] other courts have either denied or reversed on appeal grants of summary judgment for [Merrell] in eight cases." *Turpin*, 959 F.2d at 1351-52 (citations omitted). The existence of two sides on the issue is concretely illustrated by the results of the 1985 multidistrict common issues trial that resolved more than 800 Bendectin cases, in which the Sixth Circuit observed that "the jury verdict following trial here might have been for the plaintiffs instead of for the defendant," *In re Bendectin Litig.*, 857 F.2d 290, 325 (6th Cir. 1988), *cert. denied*, 488 U.S. 1006 (1989), and in which the district court had earlier observed, "Both sides presented testimony

C. *The Unwillingness To Acknowledge Inconvenient Facts Necessary to "the Truth, the Whole Truth, and Nothing but the Truth"*

Huber fails the third test of good science and good scholarship: the willingness " 'to try to give all of the information to help others to judge the value of your contribution; not just the information that leads to judgment in one particular direction or another.' " <sup>191</sup> Willful failure to take note of evidence in a given article that conflicts with predetermined views is one kind of data dredging; <sup>192</sup> obdurate failure to even mention other articles or other examples that undermine one's hypothesis is another. "Sins of omission are less obvious, but no less common." <sup>193</sup>

Huber is intimate with this sin. He bends over backwards to highlight supposed malfeasance by plaintiffs, their lawyers, and their experts, while failing to examine parallel examples of possible corporate wrongdoing. <sup>194</sup> There is good reason to worry that corporate scientists owe their allegiance to their employers first and to truth second, and that whistleblowers who reverse this scheme of priorities may be quickly shown the door. <sup>195</sup>

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of eminently qualified and highly credible experts who differed in regard to the safety of Bendectin." *In re Richardson-Merrell, Inc.*, 624 F. Supp. 1212, 1244 (S.D. Ohio 1985).

Indeed, several years later Chief Judge Rubin, the trial judge in the multidistrict case, refused Merrell's request for summary judgment in other individual cases, stating that "the Court is convinced that there are genuine issues of fact which preclude entry of summary judgment." *In re Bendectin Prods. Liab. Litig.*, 732 F. Supp. 744, 749 (E.D. Mich. 1990). Other judges have rejected out of hand the exclusive focus on epidemiology adopted by some circuits to throw out plaintiffs' claims. *See Wilson v. Merrell Dow Pharmaceuticals, Inc.*, 893 F.2d 1149, 1155 (10th Cir. 1990) (concluding that each side presented sufficient expert testimony to create conflict and that jury alone has power to weigh evidence and determine which witnesses are more credible); *Longmore v. Merrell Dow Pharmaceuticals, Inc.*, 737 F. Supp. 1117, 1120 (D. Idaho 1990) (rejecting resort to supposedly "overwhelming" statistical data in order "to bulldoze aside the plaintiffs' experts").

191. HUBER, *GALILEO'S REVENGE*, *supra* note 5, at 207 (quoting RICHARD FEYNMAN, *SURELY YOU'RE JOKING, MR. FEYNMAN!* 311-12 (1986)).

192. *See* HUBER, *GALILEO'S REVENGE*, *supra* note 5, at 27 (explaining that professional statisticians call process of disregarding "bad" data to make "good" data appear more important "data dredging").

193. HUBER, *GALILEO'S REVENGE*, *supra* note 5, at 207.

194. *See generally* HUBER, *GALILEO'S REVENGE*, *supra* note 5, at 75-168 (discussing various case studies focusing on failings of plaintiffs and plaintiffs' attorneys without mentioning failings of corporations).

195. *See, e.g.*, JUDITH SWAZEY & STEPHEN R. SCHER, *WHISTLEBLOWING IN BIOMEDICAL RESEARCH* 110-40 (1982) (discussing policies and procedures used by corporations in response to reports of misconduct in biomedical research).

If, as Huber insists, money is what drives junk science, it stands to reason that huge multinational corporations with ample resources and considerable liability exposure are more likely to sponsor junk science than are individual plaintiffs' lawyers. To cite but one example, the *Journal of Occupational Medicine*, a neutral-sounding journal, is published by the American College of Occupational Medicine, also conveying an impression of neutrality. One issue of that journal (Vol. 33, No. 12, Jan.-Dec. 1991) is devoted to "Managing the Conduct and Quality of Epidemiologic Studies," a neutral-sounding topic, and one of obvious interest to members of both the plaintiffs' and defense bars. But a cursory review of the affiliations of the



Huber hardly makes a stab at being evenhanded. He reserves ninety-nine percent of his rhetorical ammunition and every one of the seven chapters of *Galileo's Revenge* that are devoted to specific examples of junk science to horror stories involving *plaintiffs'* experts.<sup>196</sup> Huber does briefly acknowledge that "[e]ven asbestos and the Dalkon Shield have become part of the junk science story."<sup>197</sup> Still, even these concessions, necessary to preserve even a patina of objectivity, are made in the most perfunctory and misleading manner. Huber writes:

From the beginning of World War II through the 1970s, about ten million people were exposed to high levels of asbestos in the workplace. Today, good science confirms that heavy exposure to asbestos multiplies the lung-cancer risks you otherwise face by roughly five to seven times. The Dalkon Shield plays in similar leagues. Soon after worldwide marketing began in 1971, doctors observed that its users were developing pelvic inflammatory disease (PID) six to ten times as often as other women. Both Robins, manufacturer of the Shield, and Manville, a major supplier of asbestos, were driven into bankruptcy. As any knowledgeable scientist will attest, both sold products that caused great harm.<sup>198</sup>

Huber describes these subjects as "impossibly delicate, tragic, and charged with emotion."<sup>199</sup> To be sure, the agonizing deaths of hundreds of thousands of workers from asbestos<sup>200</sup> and the lingering health problems of tens of thousands of women due to the Dalkon Shield<sup>201</sup> are "tragic, and charged with emotion."<sup>202</sup> But

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*Journal of Occupational Medicine's* editorial board, and of the authors of each article in this issue, reveals that this ostensibly academic, scientific, and thus objective periodical is something other than it appears to be. Both the editor and associate editor of the *Journal* at the time of this issue were employed by major chemical manufacturers or industrial companies. The same is true of at least four of the other ten members of the editorial board. Similarly, with few exceptions, the authors of each article in this issue, which aims to set the criteria for undertaking and evaluating epidemiologic studies, are also employed by major chemical, pharmaceutical, or industrial manufacturers.

196. For example, Huber concedes, as he inevitably must, that "[y]es, the scientists at the drug and chemical companies may sometimes advance the interests of their employers by shrugging off serious scientific evidence of real problems." HUBER, *GALILEO'S REVENGE*, *supra* note 5, at 188. He similarly concedes that, professional witnesses "work[] consistently for one side (insurance companies) or the other (plaintiffs' lawyers)." *Id.* at 20.

197. HUBER, *GALILEO'S REVENGE*, *supra* note 5, at 152.

198. HUBER, *GALILEO'S REVENGE*, *supra* note 5, at 152.

199. HUBER, *GALILEO'S REVENGE*, *supra* note 5, at 152.

200. See *Failure To Regulate Asbestos: A Lethal Legacy? Hearings Before House Subcomm. of the Comm. on Gov't Operations*, 98th Cong., 1st Sess. 8 (1983) (statement of William J. Nicholson, Environmental Sciences Library) (noting that from 1980 onward there will be 350,000 premature deaths resulting from asbestos-related cancers that developed between 1940 and 1980).

201. See MORTON MINTZ, *AT ANY COST: CORPORATE GREED, WOMEN, AND THE DALCON SHIELD* 4 (1985) (noting that many of 800,000 to one million women implanted with Dalkon Shield suffer from such health problems as spontaneous miscarriages, septic abortions, and fatal abortions).

202. HUBER, *GALILEO'S REVENGE*, *supra* note 5, at 152.

these injuries, both individually and collectively, are more than "tragic" accidents or lamentable mishaps. These injuries and deaths are scandalous, not because "Robins . . . and Manville . . . both sold products that caused great harm," but because these companies sold those products for years (in the case of the Dalkon Shield) or decades (in the case of asbestos) *with full knowledge* that they "caused great harm."<sup>203</sup> That is the reason why Robins and Manville "were driven into bankruptcy": juries awarded plaintiffs huge sums in punitive damages not just because "both sold products that caused great harm" but because both companies knew that they caused great harm and kept silent; knew that they caused great harm and repeatedly denied the harm; knew that they caused great harm but withheld evidence and instructed the scientists employed by these companies to keep their mouths shut; and knew that they caused great harm but continued selling the products anyway.<sup>204</sup>

203. HUBER, GALILEO'S REVENGE, *supra* note 5, at 152.

204. HUBER, GALILEO'S REVENGE, *supra* note 5, at 152. As early as 1933, a Manville scientist informed his employer that workers who installed asbestos as insulation in buildings suffered much higher rates of asbestosis. See PAUL BRODEUR, OUTRAGEOUS MISCONDUCT: THE ASBESTOS INDUSTRY ON TRIAL 111-14 (1985) (detailing actions taken by Johns-Manville to try to suppress asbestosis findings). Manville took no action, other than ordering the information to be suppressed. *Id.* During the course of decades-long litigation against Manville and other asbestos manufacturers, processors, and distributors, plaintiffs' attorneys uncovered evidence that, among other things: (1) animal tests begun in 1943 revealed that insulation products containing low levels of asbestos could cause lung disease, *id.* at 143; (2) Manville knew in the 1950s that insulators and pipe coverers working with asbestos were at greatly increased risk of developing asbestosis, *id.* at 99; and (3) in 1947, scientists had warned the Asbestos Textile Institute (comprised of Manville and other asbestos suppliers and fabricators) that workers who endured long exposure to asbestos at levels previously considered safe were at increased risk of asbestosis. *Id.* at 143. Perhaps most damning of all, Manville scientists were part of the callous deception. *Id.* at 102-03. For example, in 1948, the medical director of a wholly owned Manville subsidiary undertook an industrial hygiene survey that revealed that only less than 1%, or 4 of 708, of surveyed asbestos workers had healthy, normal lungs. *Id.* The medical director successfully urged a corporate coverup:

It must be remembered that although these men have the X-Ray evidence of asbestosis, they are working today and definitely are not disabled from asbestos. They have not been told of this diagnosis . . . . When he becomes disabled and sick, then the diagnosis should be made and the claim submitted by the Company. The fibrosis of this disease is irreversible and permanent so that eventually compensation will be paid to each of these men. But as long as the man is not disabled it is felt that he should not be told of his condition so that he can live and work in peace and the Company can benefit from his many years of experience.

*Id.* Manville, and others, continued to market asbestos long after receiving these warnings, while failing to warn purchasers and users of these known risks. See, e.g., *Borel v. Fibreboard Paper Prods. Corp.*, 493 F.2d 1076, 1086 (5th Cir. 1973) (noting that plaintiff introduced evidence tending to establish that defendant manufacturers were, or should have been, fully aware of multitude of studies and articles on asbestos, and that evidence also indicated defendants did not warn any workers of danger), *cert. denied*, 419 U.S. 869 (1974).

Regarding the Dalkon Shield, plaintiffs' attorneys proved that by at least 1972, Robins either knew or should have known that the medical data upon which it relied in promotional literature to establish the effectiveness of the Dalkon Shield was patently wrong. MINTZ, *supra* note 201, at 86. That same year, Robins began receiving reports from concerned physicians from around the United States about deaths and life-threatening injuries being caused by the

In his discussion of asbestos and the Dalkon Shield, rather than focusing on such decades-long corporate malfeasance, Huber attempts to neutralize these episodes by changing the subject. He highlights the conduct of those whom he regards as the real villains: plaintiffs' experts who ostensibly "minimize the role of other, even more important and widespread causes of identical injuries,"<sup>205</sup> such as cigarette smoking (which causes more cancer and lung disease than asbestos), and sexual promiscuity (which is the source of more cases of pelvic inflammatory disease than IUDs).<sup>206</sup> Thus, "there is ample room for junk science even when one is dealing with real hazards and grave harms."<sup>207</sup>

What is so striking about Huber's selection of case studies is that he would not have needed to look long or hard to find possible examples of junk science practiced by corporate defendants, by the lawyers hired by those defendants, or by the experts retained by those corporations or those corporations' lawyers. In addition to presenting a truthful account of the scandals involving asbestos and the Dalkon Shield, Huber could easily have reported on strong evidence of corporate fraud and criminality<sup>208</sup> implicating corporate-sponsored scientists.<sup>209</sup> These examples include, but are not lim-

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Shield. *Id.* at 149-72. Robins officials suppressed these reports and continued to market the Shield. *Id.*

In upholding an award of \$7.5 million in punitive damages to a single victim of the Dalkon Shield, one state's highest court summarized Robins' systematic distortion of science and its extreme indifference to anything other than its own bottom line as follows:

[N]ot only was there substantial evidence to conclude that Robins fully comprehended, by 1974 at the latest, the enormity of the dangers it had created, but that it deliberately and intentionally concealed these dangers; *that it put money into "favorable" studies; that it tried to neutralize any critics of the Dalkon Shield; that Robins was motivated by a desire to avoid litigation rather than a concern for the safety of the users of the Dalkon Shield; that it consistently denied the dangers of the Dalkon Shield for fifteen years after the original marketing of the Dalkon Shield; that it commissioned studies on the Dalkon Shield which it dropped or concealed when the results were unfavorable; and, ultimately, that it consigned hundreds of documents to the furnace rather than inform women that the Dalkon Shield carried inside their bodies was a bacterial time bomb which could cause septic abortions, PID [pelvic inflammatory disease], and even death.*

*Tetuan v. A.H. Robins Co.*, 738 P.2d 1210, 1240 (Kan. 1987) (emphasis added).

The most that Huber has to say about these outrages is that "Robins [the manufacturer of the Dalkon Shield] and Manville [the largest asbestos processor] had obviously done serious wrong in covering up the hazard, or so many juries concluded." HUBER, GALILEO'S REVENGE, *supra* note 5, at 154. Huber, who does not hesitate to harshly reproach the testimony of any plaintiffs' expert or to sternly scold any plaintiff for taking part in self-destructive behavior like smoking, is unusually reticent about drawing any conclusions himself.

205. HUBER, GALILEO'S REVENGE, *supra* note 5, at 152.

206. HUBER, GALILEO'S REVENGE, *supra* note 5, at 152-55.

207. HUBER, GALILEO'S REVENGE, *supra* note 5, at 152.

208. To unearth such evidence, Huber would not have had to dig deep into history to find examples of a wave of junk science verdicts, as was necessary in his chapter on "The Midas Touch" (on "cancer-by-pothole"). Instead, all Huber needed to do was read his daily newspaper, for the examples discussed below are truly the stuff of everyday headlines.

209. See generally ROBERT BELL, IMPURE SCIENCE: FRAUD, COMPROMISE, AND POLITICAL IN-

ited to, the following.

(1) TOBACCO. The tobacco industry has continually insisted (long after every scientist not in their employ had come to the opposite conclusion) that smoking is risk free. The U.S. Surgeon General's 1986 report on the harmful effects of passive smoking, however, found:

The data reviewed in 17 previous U.S. Public Health Service Reports on the health consequences of smoking have conclusively established cigarette smoking as the largest single preventable cause of premature death and disability in the United States.

The question whether tobacco smoke is harmful to smokers was answered more than twenty years ago.<sup>210</sup>

But the tobacco industry, backed by numerous research reports authored by scores of scientists employed by the industry-funded Tobacco Institute, disputed this answer. The industry insisted that the question remains open. Thus, on March 12, 1982, Edward J. Harrigan, the chair of the Tobacco Institute's Executive Committee and the chair and CEO of the R.J. Reynolds Tobacco Co., declared that "[a]fter three decades of investigation and millions of dollars invested, the smoking and health controversy remains unresolved. The net result of all this effort has been that no causal link between smoking and disease has been established."<sup>211</sup>

Subsequent research has revealed that what Harrigan politely called a "controversy" might be more aptly described as a conspiracy to hide, distort, and falsify evidence, a conspiracy against tobacco smokers, their families, and the public health. Indeed, one federal judge described it as follows:

Evidence presented by the plaintiff, particularly that contained in documents of the defendants themselves, indicates the development of a public relations strategy aimed at combatting the mounting adverse scientific reports regarding the dangers of

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FLUENCE IN SCIENTIFIC RESEARCH 105-82 (1992) (discussing moral and ethical aspects of widespread fraud and corruption in U.S. corporate scientific research); WILLIAM BROAD & NICHOLAS WADE, BETRAYERS OF TRUTH: FRAUD AND DECEIT IN THE HALLS OF SCIENCE 140-63 (1983) (exposing corporate-sponsored fraud in scientific research). Examples of systematic fakery and fraud by individual scientists in pursuit of personal fame and private profit also abound. See, e.g., BELL, *supra*, at 106-10, 113-42 (highlighting examples of scientific fraud by individual scientists); BROAD & WADE, *supra*, at 140-63 (noting instances of individual deceit by some corporate scientists); David Goodstein, *Scientific Fraud*, 60 AM. SCHOLAR 505, 505-15 (1991) (examining ethical implications of scientific fraud by scientists corrupted by political influence and personal greed).

210. REPORT OF THE SURGEON GEN., THE HEALTH CONSEQUENCES OF INVOLUNTARY SMOKING vii (1986).

211. *Comprehensive Smoking Prevention Education Act: Hearings Before the Subcomm. on Health and the Environment of the House Comm. on Energy and Commerce*, 97th Cong., 2d Sess. 353 (1982) (statement of Edward Harrigan, chair of the Tobacco Institute's Executive Committee).

smoking. The evidence indicates further that the industry of which these defendants were and are a part entered into a sophisticated conspiracy. The conspiracy was organized to refute, undermine, and neutralize information coming from the scientific and medical community and, at the same time, to confuse and mislead the consuming public in an effort to encourage existing smokers to continue and new persons to commence smoking.<sup>212</sup>

Subsequent discovery by the plaintiffs in that same case further revealed the depths of that conspiracy as well as the active, knowing complicity of industry-paid scientists and corporate research departments in furtherance of that conspiracy. That discovery disclosed that beginning in 1954,

[The tobacco industry] sought to discredit or neutralize the adverse information [about the dangers of smoking] by proffering an independent research organization . . . which purportedly would examine the risks of smoking and report its finding to the public. . . . [T]he industry research which might indict smoking as a cause of illness was diverted to secret research projects and . . . the publicized efforts were primarily directed at finding causes other than smoking for the illnesses being attributed to it.

. . . [T]he industry's announcement of proposed independent research into the dangers of smoking and its promise to disclose its findings was nothing but a public relations ploy—a fraud—to deflect the growing evidence against the industry . . . .

. . . .

. . . Despite the industry's promise to engage independent researchers to explore the dangers of cigarette smoking and to publicize their findings, the evidence clearly suggests that the research was not independent . . . [and] that the attorney-client privilege was intentionally employed to guard against . . . unwanted disclosure [of adverse research results] . . . .<sup>213</sup>

212. *Cipollone v. Liggett Group, Inc.*, 683 F. Supp. 1487, 1490 (D.N.J. 1988), *aff'd in part and rev'd in part*, 893 F.2d 541, 546-47 (3d Cir. 1990).

213. *Haines v. Liggett Group, Inc.*, 140 F.R.D. 681, 683-84 (D.N.J. 1992). It should be noted that on a motion by the tobacco company defendants, the author of the *Haines* opinion, District Judge H. Lee Sarokin, was removed from the case on account of this strong language and its compromise of the appearance of impartiality—although in taking this course the Third Circuit stressed that it did not doubt Judge Sarokin's actual impartiality and fairness and his outstanding abilities. *Haines v. Liggett Group, Inc.*, 975 F.2d 81, 97-98 (3d Cir. 1992); *see also* *Cipollone v. Liggett Group, Inc.*, 799 F. Supp. 466, 466 (D.N.J. 1992) (containing Judge Sarokin's recusal of himself from another case, and commentary on Third Circuit's order in *Haines*).

A recent front-page story in the *Wall Street Journal* provided additional documentation of what that newspaper termed "the longest-running misinformation campaign in U.S. business history . . .," a systematic campaign to enlist some scientists to discredit others, and so to deceive consumers and government regulators, all in an effort to protect the safety of corporate profit-making. *See* Alix M. Freedman & Laurie P. Cohen, *How Cigarette Makers Keep Health Question 'Open' Year After Year*, WALL ST. J., Feb. 11, 1993, at 1, 6. The Council for Tobacco